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What's New In Cooling?

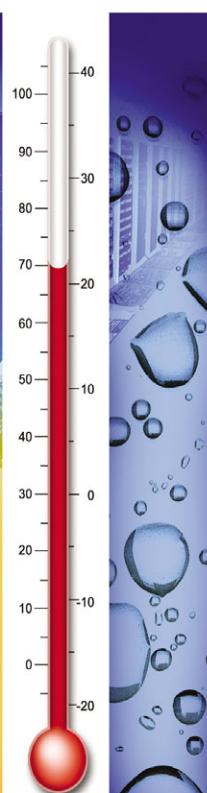
From Keeping An Eye On Humidity To Thinking Liquid, Cooling Strategies Are Evolving Quickly

by Elizabeth Millard

THE NEED FOR MORE environmental controls has increased significantly as data centers employ equipment such as high-density servers, which can increase productivity but also bring a lack of cooling predictability. Fortunately, there continue to be new advancements, technologies, strategies, and products that can ease the situation. Here are some top trends to watch.

Close-Coupled Cooling

The standard approach to cooling up until this point has been done at a room level, with air conditioners that are built



specifically for spaces that contain computers, servers, and other equipment. In the past, the raised-floor plenums were efficient at distributing cold air through perforated floor tiles, but increasingly, experts have noted that data centers are becoming overburdened because of rising heat-density levels.

One trend that's already being implemented at many centers is close-coupled cooling, which brings cooling technology and systems near the heat source. Instead of cooling down a whole room, rack-based and row-based cooling systems capture heat from smaller areas, such as a single rack, and can turn the heat back into cool air, increasing efficiency. Also, the systems have stable coil temperatures, reducing

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Connecting Remote Workers

New Technologies Help To Overcome
Distance Barriers

by Bruce Gain

IDEALLY, REMOTE WORKERS would have access to the same applications and data services as their counterparts connected to the LAN back at the main enterprise. While such a scenario may seem like an IT holy

grail, new technologies are helping break down the barriers WANs or the public Internet pose for remote workers.

"[Overcoming WAN limitations] is very tricky to solve since there is no expectation of an appliance being available [for the remote worker], just the laptop," says Arun

Taneja, analyst and founder of the Taneja Group. "But there are products coming onboard. The idea is to consolidate the application server in the headquarters and to deliver application services to users across the WAN as if they were local."

Breaking Down The WAN Barrier

The main challenge that can impede rapid data exchanges when connected to a LAN over the Internet is the WAN's TCP protocols. Ironically, the TCP protocols were created to compensate for very poor connections decades ago. They were designed to maintain data flows when connections were interrupted.

"[TCP] protocols are very chatty. When you say 'go open that file,' that particular command translates into perhaps 2,000 [data packet] round trips," Taneja says. "The reason these protocols are as chatty as they are is that the WAN's physical lines and the logic related to that were so flaky when TCP was invented."

However, software and appliance makers have created technologies called WADS (wide-area data services) that help to overcome TCP shortcomings. These

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**New technologies are helping break
down the barriers WANs or the public
Internet pose for remote workers.**

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We catch you up-to-date with some of the newest advancements, technologies, and products related to your data center's physical infrastructure.

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Ideally, remote workers would have access to the same apps and data services as their counterparts connected to the LAN back at the main office.

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As the methods for stealing data increase, including USB key drives, torrent uploads, and instant message file transfers, small to midsized enterprises should be more prepared than ever to monitor and prevent these activities.

Data Deduplication: The Right Choice? | 25

People on both sides of the fence are arguing whether data deduplication is the best or right approach. One of the biggest issues seems to be whether deduplication really reduces backup windows or saves money.

Improving Your Help Desk's Efficiency | 26

For small to medium-sized enterprises that lack the financial and personnel resources of larger enterprises, the help desk is often little more than an afterthought for the IT department.

Product Releases | 14

■ **AppSense** released the latest version of its three-component user environment management software, the AppSense Management Suite 7.2. ■

Aten released the company's first 19-inch dual-rail CAT5 integrated LCD KVM switch. ■ **ATTO**

Technology introduced the ExpressSAS H380 and ExpressSAS H308, two new host adapter products. ■ The latest iteration of the Equalizer Series family of load balancing and acceleration software, Equalizer Series V8.0, is now available from

Coyote Point Systems. ■ **IBM** announced several improvements to its line of storage products designed for SMEs. ■ **Lockdown Networks**

upgraded its Lockdown Enforcer appliance for network access control. ■ **MPC Computers** launched the MPC DataFRAME 2112 SAN appliance. ■

Psion Teklogix re-entered the PDA market with its iKon rugged PDA. ■ **Symantec** added Network Infection Alerts and Brand Protection Alerts to Symantec's DeepSight Services.

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CORRECTION

In the Oct. 26 article "Buying A NAS Or SAN System," information on three companies featured in the article's chart was inadvertently switched. You can find an updated version of the chart at www.Processor.com/October262007.

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Catbird Unveils USB-Based Security Agent

Pocket-Sized Solution Converts Any PC Host Into A Security Appliance

INFORMATION SECURITY IS A FUNDAMENTAL concern for any organization. SMEs, however, are often left with fewer options due to limited hardware and staffing resources. Recognizing this reality, Catbird Security's new Pocket V-Agent portable security assessment solution is a pocket-sized version of its V-Agent virtual appliance. Pocket V-Agent offers a slew of features to users, regardless of their security experience, in an exceedingly portable footprint. Unlike assessment tools that



require external appliances or the installation of software on a host system, the USB-based Pocket V-Agent converts any typical PC host into a security analysis tool without the need for additional components. Catbird does this by leveraging its security-as-a-service architecture along

with VMware's Pocket ACE virtual machine player.

Michael Berman, Catbird's CTO, says a USB stick with Pocket V-Agent is all that is required to conduct a security audit.

As a result of Pocket V-Agent's diminutive footprint, a single admin at a central location can easily conduct remote security evaluations at multiple sites. Once the USB devices have been distributed to the sites, anyone at that location can be instructed to mount the device. V-Agent is then launched without user intervention, following detection of the host's OS. "Pocket V-Agent revolutionizes how people have traditionally conducted security assessments in the field," says Berman.

Capable of monitoring both physical and virtual networks, V-Agent's analysis tools include real-time vulnerability data, IPS/

IDS, and breach analysis. Policy compliance and unauthorized user monitoring are also supported. The agent also monitors virtual segments within a host, as well as physical network segments connected to the host.

Catbird Security Pocket V-Agent

Free and licensed with Catbird's monthly service, which starts at \$1.50 per user

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Network Instruments Observer Caters To Customers

Version 12.1 Boasts Support For Security Forensics, VoIP & IPv6

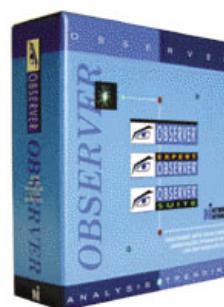
THE LATEST VERSION of Network Instruments' Observer network analysis software, 12.1, includes features that stem from customer suggestions, such as increased customization options and the capability to show certain statistics graphically. Support for Internet Protocol Version 6 and enhanced VoIP reporting are also included in the new version.

The Observer product suite embraces three core products: Observer, Observer Expert, and Observer Suite. All editions of the software offer the following features:

- Packet capture and decoding
- Real-time statistics and trending

- Support for shared and switched network environments

VoIP Expert is a component of the Observer Expert and Observer Suite products that can be used to analyze and troubleshoot VoIP on your network. VoIP Expert provides visibility into network-, application-, or conversation-level VoIP traffic; the software also supports Quality of Service and call detail record trending. Observer version 12.1 also extends integration with the GigaStor retrospective network analysis appliance and its Network



Instruments Reporting Server software.

Network Instruments GigaStor is a 4U network-based IDS (intrusion detection system) appliance. It provides long-term, real-time, and post-capture network statistics across multiple topologies and technologies. This tool is optimized for data mining, network forensics, and data retention compliance applications.

The Network Instruments Reporting Server integrates tightly with the Observer protocol analyzer family and GigaStor IDS.

Reporting Server centrally consolidates data captured from one or more Observer-based network probes and lets admins display reports of the data in a meaningful manner.

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Geographic WAN Link Balancing

Elfiq Link Load Balancer Lets You Better Manage Traffic & Meet Your Budget & Data Center Needs

ELFIQ NETWORKS' Link Load Balancer (Link LB) 4000E is designed for data centers, incorporating 8Gbps copper ports and two SFP fiber connectors in a compact 1U design. It is licensed with two virtual instances (up to five) of the Link Load Balancer and has three pairs of programmable LAN failover ports. With the powerful Link LB-4000E, you can handle more than 2.4Gbps of WAN throughput.



The LB-4000E redefines the data center-level load balancing field by providing an unmatched functionality/price/performance ratio. It differentiates itself from the competition by operating at the data link network layer (Layer 2 inline/transparent operation) to manage synchronous or asynchronous telecommunication links. Elfiq Link LB implementation is simple and does not require IP address migration or changes to firewalls or routers. This prevents the use of complex protocols, such as Border Gateway Protocol, to support multiple links, and it reduces implementation projects.

The Elfiq Link Load Balancer guarantees optimal access for your network and applications for business continuity, while optimizing your multihomed network throughput. If a link fails, the Link LB will effectively redirect network traffic toward other links based on user-defined policies.

Advanced functionalities such as Geo-Link geographic load balancing make the

Link LB a key element of disaster recovery projects and ensure maximum availability to the enterprise's IP services regardless of the scenario or environment. Traffic will continue flowing between sites when a site goes down and geographic policies clarify what kind of traffic or IP service is allowed to use another site.

For point-to-point resiliency implementations such as VPNs or VoIP, Elfiq's Best SitePathMPTX technology monitors the alternate paths and their respective effective bandwidth and then dynamically redirects the packets through the best available path without renegotiating the path, ensuring performance and uptime. The Elfiq Link LB gathers metrics and real-time bandwidth usage; this information can be encrypted and shared between two balancers for redundant implementations.

Elfiq Link Load Balancers are built around the Elfiq Operating System, and the hardware platform has no moving parts, reducing the risk of failures.

Elfiq Link Load Balancer 4000

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NEWS



Dell Restates Earnings

FOLLOWING THE COMPLETION of its internal accounting investigation that found certain accounting errors and irregularities, Dell has restated its earnings for the period from fiscal year 2003 to the first quarter of this year. The move puts the company back in compliance with Nasdaq stock exchange listing requirements. With the restatement, Dell reduced its revenue for the period from its previously reported figure of \$196.2 billion down \$359 million to \$195.8 billion. It also cut \$92 million from its net income of \$12 billion for the period.

Chip Sales Hit New Record In Q3

ACCORDING TO IDC ANALYST Shane Rau, the third quarter saw a record number of PC microprocessor unit sales worldwide, which were up 14.3% from the second quarter. Revenue, however, which was reported at \$7.95 billion, up from \$6.93 billion during the second quarter, did not set any records. The current record for worldwide PC microprocessor unit revenue was set in Q4 2005 with \$8.9 billion. An ongoing chip war between Intel and AMD resulted in both companies slashing prices in an effort to gain market share. The result is a 21% decrease in chip prices compared to Q4 2005, when the revenue record was set.

BEA Open To Offers

AFTER REJECTING ORACLE'S \$17-a-share bid, software maker BEA Systems' board of directors says it would entertain other takeover offers. BEA's largest shareholder, billionaire investor Carl Icahn, demanded that the BEA board let shareholders vote on a bid by any suitor. In a statement made in response to Icahn, board members said, "We are prepared to authorize negotiations to sell the company at a price of \$21 per share." That equates to about \$8.2 billion. On Oct. 12, Oracle offered \$6.7 billion for BEA but then withdrew the bid after BEA's board refused to let shareholders vote on the offer.

VMware Q3 Profit Tripled

THIRD-QUARTER PROFITS have more than tripled for virtualization company VMware since its initial public offering. The Palo Alto, Calif., company has announced a net income of \$64.7 million, or 18 cents a

share, compared to \$19.2 million, or 6 cents a share, a year ago. Revenue surpassed Bloomberg survey analyst estimates of \$333.9 million to top out at \$357.8 million for a 90% increase. With \$1.1 billion raised, VMware's initial public offering was the largest in technology since Google in 2004.

Microsoft Has Strong Fiscal First Quarter

MICROSOFT'S LAUNCH OF HALO 3, an Xbox 360 game released a few days before the company's fiscal first-quarter close, significantly boosted Microsoft's quarterly financials, as did strong sales in other products. Microsoft saw its fastest Q1 growth in eight years for the quarter that ended on Sept. 30. The software giant's net income was \$4.29 billion, up 23% over last year's \$3.48 billion. Earnings topped 45 cents per share, surpassing analyst forecasts of 39 cents a share. Analysts had predicted quarterly revenue would be \$12.57 billion, but actual revenue totaled \$13.76 billion, up 27% from last year's \$10.81 billion.

Verizon Posts Q3 Net Income

WITH A BOOST FROM SOLID GROWTH in its wireless subscriber figures, Verizon saw higher-than-expected profit for its third quarter with net income of \$1.27 billion, or 44 cents per share, down from \$1.92 billion, or 66 cents a share, in last year's third quarter. Excluding certain items, including merger integration expenses and international taxes, analysts had forecast Verizon would see a profit of 62 cents a share, but Verizon's quarterly profit topped 63 cents per share. Total operating revenues for the quarter totaled \$23.8 billion, up 5.8% year-over-year, while its operating income rose 19% to \$4.2 billion.

TJX Says 94 Million, Not 45.6 Million, Accounts Breached

ACCORDING TO DOCUMENTS a group of banks recently filed in a Boston federal court, the TJX Companies data breach earlier this year compromised 94 million separate card holders, which marks a dramatic increase from the 45 million that TJX reported. The banks are seeking class-action status against TJX, claiming approximately 65 million Visa accounts and 29 million MasterCard accounts were affected, with card-issuing companies reporting losses of between \$68 million and \$83 million from the Visa accounts alone, according to information from Visa.

HP Leads In Q3 PC Market Share

ACCORDING TO IDC'S most recent figures, HP has continued to outsell Dell, Lenovo, and Acer in the global PC market in the third quarter. HP's worldwide market share

increased to 19.6%, up from 17% in the same period last year. Meanwhile, Dell experienced a year-over-year decrease in its share of the global market, down from 16.9% last year to 15.2% this year. Lenovo came in third, with 8.2% market share, followed closely by Acer with 8.1%. In the U.S. market, Dell retained its top spot with 28% market share, down from 30.9% a year ago, while HP followed with 24.3%, up from 21.8% last year.

McAfee Buys ScanAlert

MCAFEE RECENTLY ANNOUNCED plans to acquire Web application security vendor ScanAlert. The deal is reported to be worth \$51 million. Through a paid service, ScanAlert makes daily scans of Web sites, looking for security vulnerabilities, as well as checking for up-to-date patches on commerce applications. According to the company, it currently monitors more than 75,000 Web sites belonging to 8,000 clients. McAfee plans to integrate ScanAlert into its Web Security Group, which is responsible for McAfee's SiteAdvisor service. In its free version, SiteAdvisor scans Web sites and scores them according to risk. McAfee also offers a paid version of the product with additional features.

More Than 88 Million Vista Copies Sold

MICROSOFT SAYS IT HAS SOLD more than 88 million copies of its Windows Vista operating system since its release, achieving more than 20% growth in Vista sales for the past three quarters. The Vista sales figures are well ahead of what Windows XP sales were when it was first released and include only consumer and small business sales, not corporate volume licenses. Microsoft CFO Chris Liddell says Vista has had especially strong sales in emerging markets, and about 75% of the Vista copies sold have been "premium" versions of the program. Microsoft says its Windows Server 2008 release candidate has been downloaded more than 1 million times; Server 2008 release to manufacturing is expected during the first quarter of next year.

Intel, Transmeta Settle Patent Case

INTEL WILL PAY TRANSMETA a total of \$250 million to settle a patent infringement suit; it will make a \$150 million payment to Transmeta initially, followed by a \$20 million licensing fee during each of the next five years. Transmeta sued Intel last October, saying several of Intel's chips violated Transmeta patents related to processor scheduling and addressing design, as well as Transmeta's LongRun power efficiency technology. Intel countersued Transmeta saying it infringed on several Intel patents. Under terms of the settlement, Intel will have a perpetual non-exclusive license to all Transmeta patents. Transmeta will still be free to develop and license its LongRun technology to third parties.

Click Fraud Continues To Thrive

CLICK FRAUD ACTIVITY CONTINUES to grow, primarily on made-for-ad sites, parked domains, and content networks, according to the most recent Click Fraud Index published by the independent click fraud monitoring and reporting group Click Forensics. During the third quarter, the overall industry click fraud rate was 16.2%, up from 13.8% a year ago; the average click fraud rate of pay-per-click advertisements was 28.1%. According to Click Forensics, publishers and advertisers are starting to feel click fraud's impact on content networks: Publishers are seeing a performance drop in the content network traffic quality, while advertisers are seeing significant drops in conversion rates.

WATCH THE STOCKS

This information provides a quick glimpse of current and historical stock prices and trends for 15 major companies in the technology market.

Company	Symbol	Year Ago	Oct 24 \$	Oct 31 \$	% change from previous week
BEA Systems	BEAS	\$15.58	\$17.55	\$16.90	▼ 3.7%
Computer Associates	CA	\$23.07	\$25.58	\$26.45	▲ 3.4%
Cisco Systems	CSCO	\$24.68	\$31.26	\$33.06	▲ 5.76%
Dell	DELL	\$24.47	\$28.49	\$30.60	▲ 7.41%
Electronic Data Systems	EDS	\$25.66	\$21.31	\$21.59	▲ 1.31%
Google	GOOG	\$476.95	\$675.82	\$707	▲ 4.61%
HP	HPQ	\$38.73	\$51.60	\$51.68	▲ 0.16%
IBM	IBM	\$92.60	\$112.95	\$116.12	▲ 2.81%
Intel	INTC	\$20.82	\$26.01	\$26.90	▲ 3.42%
McAfee	MFE	\$30	\$39.33	\$41.35	▲ 5.14%
Microsoft	MSFT	\$28.84	\$31.25	\$36.81	▲ 17.79%
Oracle	ORCL	\$18.10	\$21.18	\$22.17	▲ 4.67%
Red Hat Software	RHT	\$16.75	\$20.99	\$21.59	▲ 2.86%
Sun Microsystems	JAVA	\$5.31	\$5.82	\$5.71	▼ 1.89%
Symantec	SYMC	\$20.42	\$21.02	\$18.78	▼ 10.66%

NOTE: This information is meant for reference only and should not be used as a basis for buy/sell decisions.

Upcoming IT Events

- NOVEMBER -

ITEC Philadelphia

November 14-15
Valley Forge, Pa.
www.goitec.com

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Gartner Annual Data Center Conference

November 27-30
Las Vegas, Nev.
www.gartner.com/it/page.jsp?id=502390&tab=overview

• • • •

ITEC Portland

November 28-29
Portland, Ore.
www.goitec.com

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- DECEMBER -

Gartner CIO Summit

December 2-4
Amelia Island, Fla.
www.gartner.com/it/page.jsp?id=503856&tab=overview

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ITEC Atlanta

December 5-6
Atlanta, Ga.
www.goitec.com

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ITC East

December 5-6
Harrisburg, Pa.

www.govresources.com

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- JANUARY -

Storage Visions 2008 Conference

January 5-6
Las Vegas, Nev.

www.storagevisions.com

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Florida Educational Technology Conference

January 22-25
Orlando, Fla.
www.fetc.org

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WCA International Symposium & Business Expo

January 29-Feb. 1
San Jose, Calif.
www.wcai.com

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- FEBRUARY -

SCALE 6x - 2008

Southern California Linux Expo

February 8-10
Los Angeles, Calif.

www.socallinuxexpo.org

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Comptel Plus Spring 2008 Convention & Expo

February 24-27
Nashville, Tenn.

www.comptel.org

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- MARCH -

Gartner Wireless & Mobile Summit

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SIX QUICK TIPS

Buying The Right Computer Furniture For The Job

by Robyn Weisman

• • •

IT'S EASY TO FORGET about computer furniture. It's utilitarian, dull, something you put on the back burner until the stuff is falling apart. But if you don't have the right computer furniture, you risk damaging your expensive hardware, not to mention avoidable injuries and complaints from your employees. Therefore, we have compiled some tips to make the purchasing, upgrading, and replacement of your computer furniture something less of a headache and something you can incorporate seamlessly into your overall budget.

Understand That Furniture Upgrades Will Mirror Hardware Upgrades

Tony Ellison, CEO of office supplier Shoplet (www.shoplet.com), says given that the upgrade cycle for computers and peripherals is on average three to five years, furniture needs will change with these new configurations. Therefore, you will typically be upgrading your furniture

or adding new accessories to complement your upgraded equipment over a similar time frame.

Don't Forget About Cord Organizers

Power cords and cords joining PCs to peripherals, among others, are an obvious problem, so it is important to get them safely out of the way, so you avoid damaging them or causing them to be a hazard to your employees.

“Plenty of companies make cord organizers that separate and hold cords individually, and there are ties that allow you to bundle the cords collectively, [including] cable straps, cable managers, cable ties, bundling straps, and so forth,” Ellison says. “Additionally, when considering a furniture purchase, investigate manufacturers whose furniture has built-in cord management systems, including furniture that contains grommets through which cords can be run and locked securely in place.”

BEST TIP:

Don't Overbuy

○ Bloat is not just a software term. If you do not have a strong sense about your current needs or are unable to anticipate your future ones, you may find yourself with useless pieces that clutter your space. Don't let volume discounts or a vendor's pitch for what you might need for the future cloud your judgment.

Shoplet's (www.shoplet.com) Tony Ellison suggests you plan out the use, layout, and placement of the furniture so that you have a clear sense of what size furniture can fit in your existing space. He also recommends you look at all

available accessories for specific furniture selections because these items may provide insight for future needs and help guide your present purchases.

“Such a strategy will limit a company's immediate capital expenditure and prevent unnecessary purchases for items that may never be used or quickly become unnecessary,” Ellison says. “By keeping an eye out for available accessories and by asking for advice from [vendors, you] can determine the best add-on products for their predicted uses.”

BEST RETURN ON INVESTMENT:

Buy Furniture That Is Modular & Expandable

○ “Most well-built computer furniture is modular. Manufacturers take into consideration the fact that an office will go through changes and improvements,” Tony Ellison of Shoplet says. “With that in mind, by buying for a company's immediate needs and purchasing add-ons as needed, the useful life of such furniture can be significantly extended.”

For his part, Eli Hertz, CEO of Hergo Ergonomic Support Systems (www.hergo.com), recommends that any furniture you buy be made up of standard components that can easily be reconfigured, similar to a LEGO toy. Standard, modular designs offer more flexibility to administrators for additions or new configurations that can handle new equipment.

Buy Good Chairs (& Keyboards & Desks)

According to April Vance, an independent ergonomics expert, the most important piece of equipment in any office is the chair. “The amount of time you can concentrate is directly related to how long you can sit comfortably. That translates to profitability for the worker and the company,” Vance says.

Vance says that many chairs may look sleek but are only average in ergonomics.

warranties on all their products,” Laudadio says. “Also, if you purchase furniture made in the United States, there will be less turnaround time and higher quality, which saves money over time.”

Also, look for companies that offer quantity discounts. According to Vance, if you buy 300 cubicles and related equipment from one vendor, the vendor often will be happy to throw in the chairs for free. Although Vance stresses that getting good

If you don't have the right computer furniture, you risk damaging your hardware, not to mention avoidable complaints from employees.

“The Aeron Chair from Herman Miller [is] an entry-level ergonomic chair that is better than most but still way behind the curve of being a top ergonomic design,” Vance explains.

Vance recommends checking out the seat of a prospective chair because a chair with a moderate to deeply contoured seat relieves pressure from behind the thighs and anchors the pelvis to prevent slouching and discomfort. A seat like this distributes body weight to a much larger surface area, thereby relieving significant pressure from your spine.

Although ergonomically crafted chairs may seem expensive compared to generic task chairs, Vance says the savings that ergonomics gives to a company's bottom line makes up for the initial cost. “You have to preach getting the right chair,” Vance says. “There is a movement in the corporate world where those in real pain buy their own chair, and it goes with them throughout their career.” While placing the onus on employees to make themselves comfortable is an option of sorts, employee morale and productivity will improve if your company is proactive in this area.

Chris Laudadio, CEO and president of computer furniture manufacturer Versa Tables (www.versatables.com), adds that in general you should look for furniture that can accommodate different configurations for a variety of users. “People come in all sizes, so ergonomic furniture must be flexible in its design to accommodate anybody,” Laudadio says. “Height-adjustable tables and adjustable keyboard arms play an important role in meeting these requirements.”

Ergonomic Furniture Doesn't Have To Be Prohibitive To Your Budget

Versa Table's Laudadio says there are multiple ways to get the most bang for your buck when picking out ergonomic furniture. “A quality, reputable furniture company should offer free shipping and lifetime

ergonomic furniture is paramount, volume discounts can be the key to getting the right furniture at the right price.

In addition, Laudadio says that adjustable furniture does not have to be expensive. “Because of new ADA (Americans with Disabilities Act) and federal standards, both corporate and government purchasers are doing everything they can to find and buy furniture that meets these requirements,” he says. “Customers deeply appreciate being able to order customized furniture to meet their specifications, or buying prepackaged furniture that is adjustable and flexible out of the box.” P

BONUS TIPS

Determine common uses of products that departments can share. Tony Ellison of Shoplet (www.shoplet.com) suggests that instead of buying specific products for each department or person, try looking at common uses for products departments can share. “Many people in an open office environment can share file cabinets,” Ellison says. “Four-drawer lateral take up less space and store more than two-drawer lateral.”

In this same vein, impress on employees the importance of file management. “Your computer is your greatest file cabinet. Print out only what is necessary to be filed where a hard copy is mandatory,” Ellison says.

Let your employees participate in the selection process. Ellison also advocates including the people who will be using the furniture into the planning stage. Ask them for suggestions and consider giving them a proposed budget and letting them make their own selections. “When an employee becomes a part of the planning, he or she will be happier with the end result,” Ellison says.

NETWORKING & VPN

NOVEMBER 2, 2007

Speed Problem Identification

OptiView Portable Network Analyzer Adds Network Mapping & More

RESOLVING NETWORK issues often means knowing what's going on inside the network—but as today's networks move into gigabit speeds, doing that gets harder.

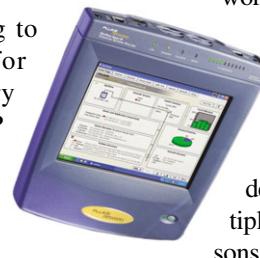
Fluke Networks recently announced new features in version 5.1 of its OptiView Series III Integrated Network Analyzer that will make this easier for network administrators, according to David Skingley, product manager of OptiView Integrated Network Analyzer at Fluke Networks. OptiView is a portable PC-based network monitoring and troubleshooting tool capable of full line-rate gigabit speed analysis.

The new features, according to Skingley, include support for SNMPv3; automatic discovery and classification of Cisco VoIP devices; VLAN trunk analysis; and enabled management port for out-of-band remote control of the analyzer.

The new Application Troubleshooting Expert option, according to Skingley, assists the OptiView user in quickly identifying the problem domain and determining whether the problem is related to the network, application, server, or client. The new OptiView

Reporter option can import data from OptiView and provide comprehensive reporting, documentation, and problem notification capabilities; this data can be exported to Microsoft Office Visio to draw network maps and can speed and simplify the normally time-consuming task of network documentation.

OptiView users, Skingley says, are typically “the people looking at potential outages and degradations that would impact multiple servers or users.” The major reasons to use an OptiView include solving network and application performance issues; managing/validating infrastructure changes; deploying new technologies and applications; and performing security checks through extensive discovery capabilities and providing visibility into network hardware,



applications, and connections. “It's a good solution for monitoring when you can't afford downtime to identify problems when they start to manifest and without taking things offline,” Skingley says.

Fluke Networks OptiView Series III Integrated Network Analyzer

Pricing starts at \$19,995; some features available free to Fluke Gold Support customers

New features make real-time network traffic monitoring and analysis even easier

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www.flukenetworks.com

FLUKE networks

Pay Attention To Your IT Data Center's Environment

AVTECH's Room Alert Lineup Provides The Right Mix Of Features To Meet Any Organization's Data Center Needs

ENVIRONMENTAL CONDITIONS in today's dense IT data centers are a major concern facing managers who already have too many responsibilities. Power outages, air conditioning failures, or blocked ventilation can cause temperatures to rise to 85 degrees or higher in minutes. Room temperatures above 85 degrees will damage equipment and put data at risk.

AVTECH Software's Room Alert lineup of advanced computer room environmental monitors watch your data center in real time, alerting you to problems and taking automatic corrective action.

Wherever environmental monitoring is important, Room Alert acts like a silent watchman to alert the right people at the right time and by the right method when environment changes occur.

Temperature, Humidity & More

The Room Alert lineup comes in four models (see chart for comparison): the 7E, 11E, 24E, and 26W. All are designed specifically to assist with monitoring computer room temperature, humidity, power, flooding, and much more in multiple locations.

Room Alert can monitor rooms ranging from small, unmanned phone or wiring closets to large, corporate data centers; Room Alert is affordable yet expandable and powerful enough to monitor extremely large or even multiroom data center environments.

The Room Alert provides an easy-to-use solution that does not require a host PC to operate. Hardware installation is quick and easy: Plug Room Alert into your network via Ethernet and place the wireless or other external sensors in the desired locations, allowing for nearly immediate IT environment monitoring from virtually anywhere.

You can set up Room Alert via the built-in Web server interface in minutes. Within the Room Alert Web server interface, you can change configuration settings, set up alert thresholds, and calibrate sensors. Firmware updates are easily completed with the click of a button, ensuring that your Room Alert ID Box is running with all the latest features and enhancements.

Real-Time Insight

The real-time insight available via Room Alert is invaluable for knowing when and

where important or critical environment changes or extremes occur. Room Alert allows temperature, humidity, and sensor status logging, advanced alerting, Fahrenheit or Celsius, temperature and humidity values in alerts, high and low watermarks, wireless sensor monitoring, and more.

Sensors can be easily added to any available set of switch sensor contacts on the Room Alert ID box. With all Room Alert models, you can purchase additional sensors to monitor temperature, humidity, power, flood, smoke, motion, sound, air flow, room entry, panic buttons, and more.

With the Room Alert 26W, AVTECH's newest addition to the Room Alert family, you can add WiSH (Wireless Sensor Hub) sensors. These battery-powered sensors communicate via a secure, private protocol that is ZigBee compatible, letting you monitor large numbers of sensors indoors and out up to 250 feet away, so you can monitor virtually anywhere, including inside a rack cabinet, air vent, subfloor, or other location.

With the Room Alert, you'll:

- Save your organization valuable time and money by eliminating the expense of

running cables, preventing disasters, reducing downtime, streamlining IT recovery, and protecting your data center.

- Allow staff to be more responsive, taking action to save data and equipment before environment changes can cause problems or disasters.
- Create a more lights-out IT environment, without the need for onsite staff to monitor temperature, humidity, and other environment changes in person.

Real-Time Readings

The power behind the Room Alert product is the Room Alert's built-in Web server or the bundled PageR Enterprise software. PageR lets you monitor real-time temperature and humidity, high and low watermarks, wireless sensor status, environment sensor status, current alarm status, and much more on Room Alert boxes and other devices network-wide.

PageR Enterprise watches anything across your network to notify remote IT staff when important events occur. When events occur or thresholds are passed, PageR automatically sends out event status information through a modem or network connection to a mobile phone, pager, PDA, email, IM, log file, Web page, console station, audio alert, or other means. Alert notifications communicate current event status, and PageR can start applications or run VB and JScript scripts or commands as a response to an object going in or out of an alarm state.

- Know immediately when important or critical server and network events occur that could lead to expensive downtime or lost worker productivity.
- Monitor across an unlimited number of server and OS types, across the department or an organization's worldwide network. Watch anything network-wide.
- Monitoring of events can be scheduled down to any one minute a month with dependencies established to control what alerts are sent, when, and in what order. This alert filtering prioritizes alerts to reduce "alert flooding" during a crisis.
- View monitoring status in real time via PageR's built-in Web browser interface from anywhere.
- Run PageR as a service to ensure an always-on monitoring solution with automatic restart on reboot.
- Easily integrate environment products like TemPageR or Room Alert to monitor physical data center conditions like temperature, humidity, power, flood, smoke, and more.
- Enjoy easy, immediate contact with IT staff by using PageR's interactive or manual paging and notification utility. Contact information is protected and interactive use is logged for security.

With PageR, you can save time and money while making your department more responsive to IT events and threats. PageR delivers knowledge and power to your staff and managers, giving them the advantage of time and information.

AVTECH Software Room Alert & PageR Enterprise

Room Alert is a lineup of advanced computer room environment monitors that monitor your data center in real time, alerting you to problems and taking automatic corrective action; PageR Enterprise software watches anything across your network to immediately notify remote IT staff and managers when important events occur

(888) 220-6700

www.avtech.com



How The Room Alert Models Compare



Room Alert 26W	Room Alert 24E	Room Alert 11E	Room Alert 7E
<ul style="list-style-type: none"> \$1,195 (1U 19-inch rack model) Built-in digital temperature sensor Built-in digital humidity sensor Built-in main power sensor Built-in flood sensor (just add cable) One external digital temperature sensor One external room entry sensor Six external digital sensor ports 16 sets of switch sensor contacts for connection of additional external environment sensors PageR 20 Object Enterprise software license Power adapter, 10-foot Ethernet cable, printed and PDF documentation, CD media and Getting Started materials 12 months of toll-free technical support, software updates, maintenance, and hardware guarantee 	<ul style="list-style-type: none"> \$895 (1U 19-inch rack model) Built-in digital temperature sensor Built-in digital humidity sensor One external main power sensor One external digital temperature sensor One external room entry sensor Six external digital sensor ports 16 sets of switch sensor contacts for connection of additional external environment sensors PageR 20 Object Enterprise software license Power adapter, 10-foot Ethernet cable, printed and PDF documentation, CD media and Getting Started materials 12 months of toll-free technical support, software updates, maintenance, and hardware guarantee <p>Additional options include:</p> <ul style="list-style-type: none"> External digital sensors for temperature/humidity, temperature, and power External switch sensors for power, flood, smoke, motion, air flow, room entry, and more PageR Enterprise software license upgrades International plug adapter 	<ul style="list-style-type: none"> \$495 (standard model)/\$545 (rack model) One external digital temperature/humidity sensor One external digital temperature sensor One external power sensor Eight sets of switch sensor contacts for connection of additional external environment sensors PageR 10 Object Enterprise software license Power adapter, 10-foot Ethernet cable, printed and PDF documentation, CD media and Getting Started materials 12 months of toll-free technical support, software updates, maintenance, and hardware guarantee <p>Additional options include:</p> <ul style="list-style-type: none"> External digital sensors for temperature/humidity or temperature External switch sensors for temperature, humidity, power, flood, smoke, air flow, room entry, and more PageR Enterprise software license upgrades International plug adapter 	<ul style="list-style-type: none"> \$395 (standard model)/\$445 (rack model) One internal digital temperature sensor One external digital temperature sensor One external power sensor (loss of main or UPS power) Three sets of switch sensor contacts for connection of additional external environment sensors PageR 10 Object Enterprise software license Power adapter, 10-foot Ethernet cable, printed and PDF documentation, CD media and Getting Started materials 12 months of toll-free technical support, software updates, maintenance, and hardware guarantee <p>Additional options include:</p> <ul style="list-style-type: none"> External digital sensors for temperature External switch sensors for temperature, humidity, power, flood, smoke, air flow, room entry, and more PageR Enterprise software license upgrades International plug adapter

TeamQuest Model Predicts Resources Required

Modeling Capability Sets It Apart From The Competition

IT MANAGERS ARE ALWAYS on the lookout for new ways to make the best use of their limited IT resources, regardless of the size of the enterprise. TeamQuest Model, a capacity planning package, takes the guesswork out of the equation by accurately predicting the resources required to support consistent service delivery at appropriate risk levels. This enables you to right-size and justify purchases, reduce hardware expenditures, and improve the ratio of servers to personnel.

Multidimensional Software

TeamQuest Model helps enterprises avoid bottlenecks entirely by accurately predicting the specific IT infrastructure required. It ensures systems are optimally configured, avoiding wasteful underutilization but ensuring systems are sufficient to meet required service levels. It also lets you experiment with what-if questions and see the effects of changes before they are made. TeamQuest Model predicts the impact of application changes, server consolidation, business expansion, or workload growth, allowing the right amount of hardware to be allocated at the right time to meet business demands.

Specifically, you can use TeamQuest Model to:

- Predict the resources required to meet service levels as demand increases
- Identify which components will negatively impact response time

- Find the least expensive way to accommodate workload increases

TeamQuest Model uses analytic modeling capabilities to quickly and accurately predict the impact of changes without requiring you to configure any hardware or apply artificial loads. You can thus experiment with configuration changes, consolidation options, and demand levels to be sure you are allocating the right resources to meet business priorities.

TeamQuest Model also predicts response time from different components in a multitiered environment. It supports virtualized environments, including support for simultaneous multithreading on POWER5, micro-partitioning, and shared processor pools.

Analytic & Simulation Modeling

TeamQuest Model offers both analytic and simulation modeling capabilities. Analytic modeling uses math to calculate how a queuing network will perform. Simulation actually simulates the queuing events that occur during execution. While simulation modeling is useful in specific situations, it often takes longer to build and execute the model. Analytic modeling, however, is a fast and accurate technique most often used by TeamQuest customers.

Regardless of the modeling technique used, a baseline set of measurements is taken on a system, and a model is then

built based on a description of the system. Results from the model are compared with the baseline, and when they match, the model is considered calibrated. From there, hypothetical changes can be made to system configuration or business workloads, and the model will predict how the changes will affect performance.

Myriad Features

Using the capacity planning software, you can model a single system or multitiered applications and analyze your Web server, application server, and database server all together. You can see various systems as components of the overall response time and focus on systems that are causing performance problems. In addition, TeamQuest Model lets you define workloads that span multiple systems and experiment with adding servers to a tier for horizontal scaling.

TeamQuest Model lets you analyze response time by business workload, uncover which devices are responsible for the largest portion of response time, determine what percentage of time is spent in the CPU or waiting for I/O devices, and meet service-level objectives.

By knowing in advance the amount of resources your systems will require, you can make informed capacity planning decisions. You'll be able to consolidate servers with confidence, manage the impact on servers for mergers and acquisitions, and

predict the impact of workload changes. You'll also have the knowledge necessary to upgrade just-in-time and objectively justify upgrades to management. The software enables you to get more out of your company's existing resources and identify underutilized resources so you can redeploy them for other services where they will be better used.

TeamQuest Model enables you to be ready for changes in demand. You'll know in advance how systems will respond to unexpected bursts of activity. You can make sure systems are adequately configured for new applications. You will also be able to avoid outages and performance problems by planning ahead and will understand which IT components will likely be your weakest links.

The TeamQuest software also has a reporting feature to report model results, workload and queue result statistics, and summary statistics. You can view the textual reports in TeamQuest Model and graphical reports using Microsoft Excel. You have the option of viewing, customizing, and creating reports quickly and efficiently using Excel or other spreadsheet applications.

TeamQuest Model

Capacity planning software that accurately predicts the resources required to support consistent service delivery at appropriate risk levels

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Improved Application Availability

A10 Networks' AX Series Next-Generation Server Load Balancer Provides Industry's Best Price/Performance



Two AX SERIES switches from A10 Networks are designed to provide reliable, cost-effective application-delivery platforms.

A10's AX Series is the industry's best price/performance advanced traffic manager, helping enterprises maximize application availability through a scalable, high-performance application delivery platform.

The AX's ACOS (Advanced Core Operating System) architecture is revolutionary by market standards because of its native multisystems support, which includes an optimized multi-CPU architecture built from the ground up designed for performance, scalability, and reliability.

The AX's ACOS architecture scales performance across multiple decoupled CPUs and specialized programmable ASICs linearly to ensure maximum scalable performance, including when all of the features are turned on. The AX Series' aRule

Advanced Scripting technology provides ultimate policy creation flexibility to deliver rich traffic inspection and switching capabilities, helping organizations adapt to ever-changing conditions and application types.

The end result is a switch with uncompromised performance even when all features are turned on, which helps organizations reduce data center power, server, and rack space requirements. Plus, all features are included in the standard list price.

The two newest AX Series appliances, 2000 and 2100, are 2U appliances designed for enterprise data centers and server farms. The AX 2000 has two CPUs, 2GB of memory, eight Gigabit over copper ports, two G small-form factor pluggable fiber ports, and an 80GB hard drive. The AX 2100 has those same components, plus an additional two CPUs and two G small-form factor

pluggable fiber ports; the 2100 also has dual 80GB RAID 1 hard drives.

All AX models feature carrier-grade hardware, the industry's best SSL and Layer 4-7 price/performance, support for IPv4 and IPv6, and an industry-standard command-line interface and easy-to-use GUI.

A10 Networks AX Series

The AX Series is the industry's best price/performance next-generation server load balancer

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A Master Enterprise View

New ATEN KVM Bundle Provides Perfect Features For Monitoring & Maintaining Servers & PCs

TODAY'S DATA CENTERS require convenient, space-saving, streamlined KVM equipment. ATEN's 17" Single-Rail LCD Integrated Console and MasterView KVM bundle is designed with those needs in mind.

ATEN's economy LCD KVM console, CL1000M, integrates a keyboard, 17-inch LCD, and touchpad in a 1U Slideaway housing. Setup is fast and easy. There is no software to configure, no installation routines, and no incompatibility problems. Slide the console module section out and flip up the cover, and you are ready to work.

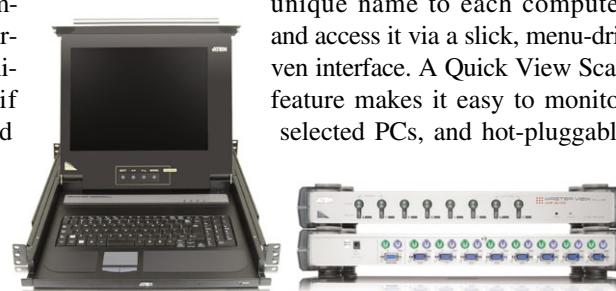
When finished, flip down the cover and slide the console module back into the rack.

By using the CL1000M to manage your installation, you save space; eliminate the expense of having to purchase a separate keyboard, monitor, and mouse for each PC if attaching to a KVM switch; and can take advantage of upgrading your current system.

ATEN is now bundling the CL1000M with an eight-port MasterView Plus,

which helps reduce the need for redundant hardware. With the MasterView Plus, you can control up to 512 computers with a single keyboard, monitor, and mouse. And it requires no software.

MasterView Plus is more than a simple eight-port KVM switch. A built-in Auto-Scan mode lets you monitor every attached computer for a specified amount of time, while the on-screen display lets you assign a unique name to each computer and access it via a slick, menu-driven interface. A Quick View Scan feature makes it easy to monitor selected PCs, and hot-pluggable



capabilities mean you can add or remove PCs for maintenance without powering down the switch. The MasterView's 1U, 19-inch rack-mountable casing and status-monitoring LEDs make it ideal for server rooms or other multicomputer environments.

ATEN 17" LCD Integrated Console & MasterView KVM (model CLCS9138MKIT)

Includes an eight-port KVM switch and a KVM console with a keyboard, 17-inch LCD, and touchpad

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Server Racks & Enclosures Add Value

Businesses Have Increasing Options When Tailoring Racks For Data Center Operation

by Darrell Dunn

BUSINESSES ARE INCREASINGLY turning their attention to optimization of the racks and enclosures used within their data center operations as they seek to enhance efficiency and build out physical infrastructure that can provide a path for growth.

The proper selection of appropriately sized racks can allow a business to correctly attack power and cooling requirements, says Cliff Unger, senior sales engineer for DirectNET (www.directnet.us), a data center equipment and services company. Midmarket businesses are increasingly looking to take a strategic approach to data center design and facilitation, selecting enclosures and related power and cooling equipment to maximize current and future operational efficiency.

Perhaps the biggest change can be represented by how businesses expecting to grow are moving beyond piecemeal deployments of 1U and 2U standalone racks to specialized enclosures and racks that can reduce energy cost, maximize data center real estate, and simplify management, Unger says.

"These businesses are changing their mindset from being tactical to being strategic," he notes. "Rather than simply adding servers as they grow and winding up with a dozen 1U servers spread around the floor, they are looking to branch out to look at technologies like blade servers that can maximize their power and real estate budgets."

Gordon Haff, an analyst with Illuminata, says that SMEs have found the integration that generally comes with bladed server platforms and enclosures to be of particular benefit when working with small staffs.

Blade enclosures on the market not only allow for centralization, but they can generally reduce cabling and make monitoring and maintenance simpler.

Look At Available Options

When considering potential enclosures, businesses should look for rack design options such as adjustable or fixed server shelves and sliding keyboard shelves, Unger says. Users should also use appropriate rack-loading techniques, including placing heavy



items at the bottom of the rack to prevent "top-heavy" enclosures.

Security should also be of top concern, Unger says, and many enclosures are now offered with an option for front- and rear-locking doors. Intelligent power strips can also notify administrators of unauthorized cabinet entry.

"Businesses that are ready to take a strategic look at these issues and are ready to move to an operation designed for growth need to spend time considering overall power requirements and looking at thermal dynamic studies to determine what type of server and cooling strategy is most appropriate," he says. "They should consider strategies that

incorporate what they have now and what they look to be doing in the future."

Keeping The Heat Down

The shift in how data center operation is viewed is evident in the fact that the American Society of Heating, Refrigerating, and Air-Conditioning Engineers in recent years has shifted its focus from looking at watts per square foot used with data center operations to concentrating on kilowatts per rack, says Phil Dunn, senior product manager of rack products for Emerson Network Power (www.liebert.com).

The biggest threat for many data centers is localized heat that creates "hot servers" and "hot zones."

Leading data center equipment suppliers such as Emerson, as well as server manufacturers such as IBM (www.ibm.com) and HP (www.hp.com), have developed a variety of specialized enclosures that attach fans or refrigerant systems directly to server enclosures to provide higher levels of cooling potential.

"From a rack perspective, there are a wide variety of supplemental cooling techniques that can be implemented now, depending on how severe the situation is," Dunn says. "For some places where there might be restricted airflow, something as simple as an additional fan blowing heat out the rear door can provide benefit."

Integrated Monitoring & Maintenance

The biggest trend in enclosures has been getting items such as power strips and system management integrated into the design. "Customers are looking for more convenience, and they want more accessories mounted in the cabinets before they leave the factory," Dunn says.

"Small and medium businesses have special requirements for more rack-level monitoring," he says. "Many times these businesses may not have someone in the data center at all times, and monitoring can be

Product To Watch: Specialized Blade Servers

The potential for energy and operational efficiencies has made blade servers the fastest growing segment of the market, and the switch to blades has required the adoption of new types of enclosures and racks to accommodate the equipment.

Growth of blade server adoption in the mid-market has been stronger than expected, and blade server market leaders IBM (www.ibm.com) and HP (www.hp.com) have recently introduced blade server platforms that have enclosures and built-in features specially tailored to meet the needs of the midmarket.

IBM provided the first details of its BladeCenter S platform in June and plans a formal introduction next month. In September, HP introduced "Shorty," a platform the company says provides an "easy-to-configure data center in a box," targeted specifically at the mid-market.

"Truthfully, if you look at the midmarket, most of them are unhappy when they purchase IT products that are typically just watered-down enterprise-class solutions," says Jim Ganther, director of BladeSystem for HP.

Shorty comes in a more compact enclosure than previous BladeSystem platforms. The enclosure can accommodate up to eight blades and plugs in to a standard wall electricity outlet.

IBM will make its BladeCenter S platform available as an Office Ready Kit that is designed to run "virtually anywhere in the office," says Alex Yost, vice president and business line executive of IBM BladeCenter.

The kit includes such features as built-in air filters to block dust and a noise attenuator that muffles noise associated with the system, making it easier to use in small office environments. Use of the platform can allow customers to reduce energy use by as much as 25%, Yost says.

crucial. Having critical performance information right at the rack can be a real time and resource saver."

An additional feature to look for in racks and enclosures for improved ease of use is a tool-less design that allows a customer to complete installation of the rack without the need for specialized tools and equipment. Many racks can be purchased that utilize plastic turn clips instead of screws, as well as rails and brackets that can be manipulated by hand. □

NETWORKING & VPN

OCTOBER 5, 2007

Physical & Virtual Management

KACE's Integrated Appliances Combine Systems Management

VIRTUAL MACHINES, like hardware systems, need systems management. As the use of virtualization proliferates, IT admins are searching for effective ways to add management capabilities for these virtual systems.

KACE recently announced support for virtualized environments and other new features on its KBOX 1000 Series Systems Management Appliances and KBOX 2000 Series Systems Deployment Appliances, making them, according to KACE, the first integrated appliances for managing both virtual and physical environments with a common set of management capabilities from a single user interface.



According to Marty Kacin, president and CTO of KACE, the KBOX 1000 performs IT endpoint network node life cycle maintenance tasks, including inventory, assessment, audit, compliance management, and reporting, and the KBOX 2000 supports centralized provisioning and remote system recovery tasks, including bare-metal installation, booting on PXE (Preboot Execution Environment), native OS installation, or a

KBOX K-image deployment. KBOX allows virtual machine deployment, discovery/inventory, patching, updates and policy enforcement, and license compliance.

KBOX appliances can manage a variety of guest OSes running on a variety of virtual infrastructures. KBOX appliances provide agentless deployment of physical and virtual machines; KACE also provides a single integrated agent to support physical and virtual environments.

KACE also announced vState Management, a new KBOX feature responding to requests to be able to manage both virtual and physical environments simultaneously.

KACE's new vState Management feature reduces central storage, network bandwidth, and time needed to reset or reprovision virtual systems by letting IT reset virtual machines to a state defined a K-image file

manifest in the KBOX Systems Deployment Appliance Library.

To learn more, visit www.kace.com/best-practices-in-virtualization to view a new white paper on virtualization.

KACE KBOX Family

KBOX 1000: \$9,900, including first 100 nodes

KBOX 2000: \$12,900, including first 100 machines

System management appliances that can handle both physical and virtual environments, for integrated administration and management

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 **KACE**

What's New In Cooling?

Continued from Page 1

the risk of humidity developing during the process.

Thinking Smaller

Also in line with thinking about a data center in terms of zones or racks rather than as a large space to be cooled, air-containment systems are likely to be more prevalent in the future, experts note. These systems isolate the hot and cold air streams so that there's no unwanted recirculation, a common source of inefficiency. For example, a zone can be created within a data center that closes in a hot-air aisle with the use of doors and partitions. By sectioning off a center into different modules, cooling

products adjusted to each zone's particular cooling needs can be tweaked and monitored separately.

Increased Emphasis On Humidity

With more cooling comes the potential for humidity within a system, particularly those that aren't checked frequently for wear-and-tear, notes Eric Birch, an executive vice president at AdaptivCool (www.adaptivcool.com), developer of a system that can intelligently manage airflow in data centers.

"All of the in-room air-conditioning systems have dehumidification and humidification functions built in," he says. "But what we've found on a number of occasions are cracks on the sides of the equipment, making for a huge waste in energy."

Also, if the situation worsens, it could cause an outage, he adds. In addition to monitoring temperature levels, Birch predicts that humidity levels will also become

Processor.com

much more important as different cooling strategies are put into place.

Getting Portable

Data center cooling and monitoring needs change swiftly, but it's difficult to keep reconfiguring a data center, even those built on a modular style. One solution

One trend that's already being implemented at many centers is close-coupled cooling, which brings cooling technology and systems near the heat source.

Company To Watch

When it comes to cooling and monitoring, everyone could use a bit more precision. At least, that's the way Data Aire (www.dataaire.com) sees it. The company specializes in "precision air," which controls the three main behemoths of indoor air quality: temperature, airborne particles, and humidity. The lack of management in any one of these areas can contribute to system and component failures and run an IT department over budget with ensuing maintenance and repairs. In its products, the company has created an integrated approach that keeps the three factors under constant surveillance.

Data Aire offers several product lines, including floor-mounted units, heat exchangers, ceiling-mounted units, and system controls. For those data centers where floor space and ceiling space are limited, there are specialty units that are wall-mounted and can be accessed through a front cabinet door.

In terms of control systems for monitoring, Data Aire has several options, from Intelli-DART Control System, which can track 32 independent zones and 260 precision cooling units, to the Mini Data Alarm Processor II, a wall-mounted monitor that tracks humidity, airflow, and air cleanliness.

that's likely to keep gaining traction is portable cooling, allowing data center managers to bring smaller units into an area that might need a cooling boost or requires some redundancy measures.

The idea of a separate, portable unit certainly isn't new—Atlas Sales & Rentals (www.atlassales.com) introduced the CoolCube 10 a few years ago, and other units were available before then. But demand has driven more development recently from companies such as Movin-Cool (movincool.com), Atlas, and Data Aire (www.dataaire.com). (See the "Company To Watch" sidebar for more information on Data Aire.)

Products to keep in mind include Kwi-Kool's I/O Integral Condenser (www.kwikool.com), a system that brings in air from an outside source to cool the condenser and then returns the hot air outside. This type of system is superior to some spot coolers, the company claims, which cool condensers by using cold air from the room, creating a vacuum that can suck in dust, dirt, and humidity.

42U (www.42U.com), a provider of data center and server management products.

What was old is now new again: On the rise are modular liquid-cooling units that can be used within a fully sealed cabinet and are mounted at the rack base, providing a total cooling capacity of 30kW. Liquid cooling uses air and liquid heat exchangers, isolating equipment from an existing air-conditioning system. The systems are considered quite efficient by some experts, who point out that water can carry about 3,500 times more heat than air. Liquid refrigerants can be used as well, creating a custom-built strategy.

Data center managers that are considering liquid cooling will want to take a variety of factors into consideration, notes Nowenstein, including humidity, temperature, flooring surface, and condensation.

"It is also important to consider current and anticipated future heat load and access/connections to adequate and reliable electrical and water or refrigerant supplies," Nowenstein adds. P

Connecting Remote Workers

Continued from Page 1

solutions essentially boost remote file and application sharing speed over the public Internet to approach what one gets when onsite and connected directly to the enterprise's LAN.

"So the idea is to make the user in remote offices feel like they are sitting on the edge of the LAN," Taneja says. "The idea is about how we can deliver applications over a continent or continents."

Taking WADS A Step Further

WADS vendors include Cisco (www.cisco.com), Expand Networks (www.expand.com), GlobalSCAPE ([scape.com>\), Packeteer \(\[www.packeteer.com\]\(http://www.packeteer.com\)\), Riverbed \(\[www.riverbed.com\]\(http://www.riverbed.com\)\), and Silver Peak Systems \(\[www.silver-peak.com\]\(http://www.silver-peak.com\)\). Most of these providers offer a variety of services that go beyond just helping to overcome the TCP connection problems between a remote worker's laptop or office and an enterprise's LAN.](http://www.global</p>
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It is possible, for example, for WAFS (wide-area file services) software to automatically sync changes to files made on a remote office laptop with files saved on an enterprise server. Working in the background and transparent to the user, the software uploads any changes made to a file on a laptop once it is connected to the

Internet. The changes are then saved on the enterprise's main server.

"You have your data with you, whether you are in a train station, on a plane, or in your house," says Timothy J. Barton, vice president of operations for GlobalSCAPE. "And if you happen to have network connectivity, the [changed data] is transmitted through the network and is synchronized back with that server."

An engineer who is creating AutoCAD files during the day might be in the field, Barton says. "When he connects to the network, the changes to the files are automatically [uploaded], without really any explicit action by that engineer," Barton notes. "The changes are merged back at the central office."

The Browser Connection

Not every remote user, of course, requires direct access to the main enterprise's LAN. Many remote workers have only limited requirements when it comes to the applications or files that they need to take with them while on the road or the amount of data they need to download from or upload to an enterprise's LAN servers. A salesperson, for example, may only need to periodically upload a limited amount of information every day with a PDA, laptop, or a PC while on the road through a Web link where he accesses an Excel file. Even something as rudimentary as Google's shared documents makes it possible to enter data in a spreadsheet file, which others can share online.

"You [often] no longer have to install applications on the remote device," says David Passmore, an analyst for The Burton Group. "There is a general trend to move to browser-based devices, such as iPhones."

There will thus be an increase in applications in the near future that are written for browser-based access with PDAs and laptops, as well as for PCs, Passmore says. "The beauty of this from an administrative standpoint is that these solutions are much easier to administer because you don't have to load [a lot of] application software on

Wide-Area Data Services Offerings

WADS (wide-area data services) solutions help to overcome the distance barriers when connecting to enterprise LANs from remote offices or while on the road. The solutions are designed so you can access files and apps remotely with the same facility as if you were onsite and connected directly to the Ethernet network.

Cisco

www.cisco.com

Wide-area file services software overcomes WAN latency and bandwidth limitations with proprietary technologies

Expand Networks

www.expand.com

Accelerates WAN connectivity by reducing latency effects in file access with CIFS acceleration and file caching; its solutions offer TCP acceleration to further improve remote file access speed

GlobalSCAPE

www.globalscape.com

Its real-time multidirectional data replication technology ensures that the same data exists on all servers regardless of where changes occur

Packeteer

www.packeteer.com

Offers "Branch Office in a Box" solutions for data access for remote users connected by a WAN; its offerings boost WAN performance for apps and file services while minimizing the impact of additional WAN traffic

Riverbed

www.riverbed.com

Wide-area data services solution accelerates apps running over TCP; its solutions accommodate a heterogeneous mix of data and applications moving across LANs to remote sites

Silver Peak Systems

www.silver-peak.com

In addition to WAN acceleration, its appliances offer scheduled configuration backups, automatic software updates, and other tasks

Liquid Cooling

Historically, liquid-cooling strategies were used to cool mainframe computers, but as power consumption and densities fell to less than 5kW per rack, air cooling became the prevailing standard, according to Lauren Nowenstein, technical writer for

the devices," he notes. "And if the devices are lost or stolen, there is nothing on them that you have to worry about as far as data or privacy concerns go."

Motorola Good Technology Group (www.good.com), for example, offers a browser for mobile devices that can be used to access the corporate intranet, while applications from Salesforce.com can accommodate an entire sales department's needs with Web browser-based solutions that do not have to be installed on a PDA, laptop, or PC, Passmore notes.

"You don't have [to] preload applications before you go on a trip," Passmore says. "The software doesn't care where you are, whether you are in a Starbucks or a hotel room." P

Speeding Up Remote Access

When selecting solutions, consider a few criteria:

Decide what your needs really are. WADS (wide-area data services) offerings differ in scale and price, so the most comprehensive solution is not always necessary.

Browser connections may be enough. In many cases, inexpensive browser-based applications that workers can connect to over the Internet with a PDA or a laptop are sufficient.

The importance of storage. With a WADS solution, it is possible to integrate data backups of remote offices directly into the main enterprise's LAN storage infrastructure.

Security is paramount. A good rule of thumb is to ensure that all connections are encrypted, whether with WADS connections or when workers are accessing browser-based applications.

Power To The Rescue

Trends In Data Center Power Management

by Don Reisinger

AS DATA CENTER MANAGERS are well aware, power is one of the most important elements of any data center. And as data centers continue to grow, there is an ever-increasing demand for greater cooling capability, which in turn creates a power crunch that not only raises the cost of doing business but can lead to severe issues if a data center is not adequately equipped to scale with its growth.

With that in mind, a number of trends have developed in the industry that address some of the issues related to power consumption and help data center managers find new and inventive ways of managing power and its consumption in a data center.

Power Protection

Power protection is one of the most important elements of a data center's power infrastructure. Without some element of protection, the data center will not run nearly as smoothly as it should and could lead to significant problems for both the company and the data center manager, alike. Realizing this, a number of firms are finding new ways to protect power and safeguard themselves from the threat of a power failure.

As Pete Sacco, president of PTS Data Center Solutions (www.ptsdcs.com), points out, "Power failure is a leading component of computer room downtime. For that reason, much consideration should be given to the power protection and distribution schemes employed in a data center."

According to Sacco, his firm recommends the use of UPS equipment with redundant components built in, such as Liebert's Nfinity (www.liebert.com) series and Powerware's BladeUPS (www.powerware.com) series, "to achieve N+1

redundancy for the power stage, or better still, by utilizing two separate capacity UPSes in a 2N configuration."

Sacco also explains that if long-term backup power is required, it is incumbent upon all data center managers to employ the use of standby generators. And while some may use batteries for long-term use, Sacco believes they are far too big and expensive to justify their use.

The Ever-Increasing Power Requirements

Another important trend in the data center space is the constant need for greater power and cooling capabilities. According



to Ron Hughes at the California Data Center Design Group (www.cdcg.com), "Most existing data centers are probably still at a density of less than 3kW per rack. Realizing this is too little, almost all data centers are implementing technologies that are closer to 5kW per rack or more. As a result, most of the data centers the California Data Center Design Group are designing today are designed for between 5 and 10kW per rack."

Understanding that power consumption will continue to increase is central to the success of any data center. As Hughes points out, data center managers should be ready to address power needs and realize that 3kW-per-rack systems are

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simply not enough to grow with over time.

More Power In A Smaller Space

As Sacco explains, "The most common power trend in data center environments is more power in a smaller space. The effort has been to reduce the size of electronics such that it uses a smaller footprint and, therefore, can fit more electronics. However, densities in computer rooms are being pushed to the maximum, as it is easier to source power for the dense loads than it is to cool them."

Because of this, most data center managers are looking for new ways to counter the complexities of the increasing power density trend. As a result, PTS Data Center Solutions has employed 3D CFD (computations fluid dynamics) software for the "design, operational analysis, and maintenance for data centers of all sizes." According to Sacco, the intent is to improve designs and help data center managers effectively manage mission-critical

facilities throughout their lifetimes. In essence, PTS has realized that this density crunch is a central issue, and it will use this technology to minimize the risk of cooling and performance issues.

Time To Go "Green"

One of the foremost trends in data center power is the effort to go "green." As Hughes explains, his firm has "several data center projects underway today that are seeking LEED [Leadership in Energy and Environmental Design] certification."

Amazingly enough, large data centers can use several million

dollars' worth of electricity per month, and according to the U.S. Environmental Protection Agency, 1.5% of U.S. electrical usage can be attributed to data centers. But by going green, data center managers have found a new way to minimize power costs while becoming friendlier to the environment. By acquiring LEED certification and

Company To Watch

Server Technology (www.servetech.com) is a leader in power solutions for the data center. With years of experience, the company has been able to offer remote power management and efficiency solutions for small to midsized enterprises. Server Technology designs and manufactures one of the most comprehensive lines of CDUs (cabinet power distribution units), ranging from -48V products for telcos to single-phase power (110V, 208V, 230V) and three-phase power products (208V and 400V).

According to the company, "Server Technology, Inc. designs and manufactures products to reduce downtime and improve data center power management. Products include intelligent Cabinet Power Distribution Units, that provide power management via IP, branch circuit protection, input current power monitoring, environmental monitoring, and serial console port access."

In essence, STI provides the infrastructure and cabinets data center managers need to take power management and overall efficiency to the next level.

employing more efficient data center power and cooling systems, the initial investment may be higher, but overall, the company will save millions by the time it needs to build a new data center.

But as Sacco points out, "The real energy savings leaps have been and always will be directly related to the ability to produce ever-increasingly efficient microprocessors, as they are the primary source of heat dissipation in the computer room."

Regardless of which method a data center manager employs, the end result is the same: Companies want to save money, and if it means it helps the environment, then it's all the better. With that in mind, data center managers have found new and inventive ways of helping the environment, and for the first time, it looks like that lofty energy usage figure may be reduced.

Data center power is one of the most important elements of any successful business operating. But by addressing the aforementioned trends currently being witnessed in the industry and finding new ways to reinvent the way data centers are run, IT managers can enjoy a whole new way of doing business. □

Large data centers can use several million dollars' worth of electricity per month, and according to the EPA, 1.5% of U.S. electrical usage can be attributed to data centers.



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KVM & Console Access Move Ahead

A Look At The Cutting Edge Of Data Center Device Control

by Christian Perry

AT FACE VALUE, THE CHANGES through the years to KVM and console access technologies don't appear quite as drastic as changes seen with other technologies. However, for those in the trenches that depend on these tools day in and day out, they've received major facelifts and continue to evolve to provide better control in the data center.

KVM and console access have moved gracefully from a primarily direct access focus to more of a remote approach, and experts contend that this movement will continue as companies seek more refined ways to access data.

"It is no longer your father's KVM," says Richard Dominach, senior product manager at Raritan (www.raritan.com). "Centralized access systems providing secure, single-IP access to a company's entire IT infrastructure are available. This includes KVM over IP, serial console access, software-based access, embedded KVM, and remote power control."

KVM Goes Remote

According to Michael Helms, director of product management for the SME division

Company To Watch

Wading through the deep waters of KVM and console products can be a harrowing experience, especially for smaller companies with specific needs to fit their specialized equipment. But the buying experience doesn't need to be fraught with confusion, and i-Tech (www.i-techcompany.com) proves it.

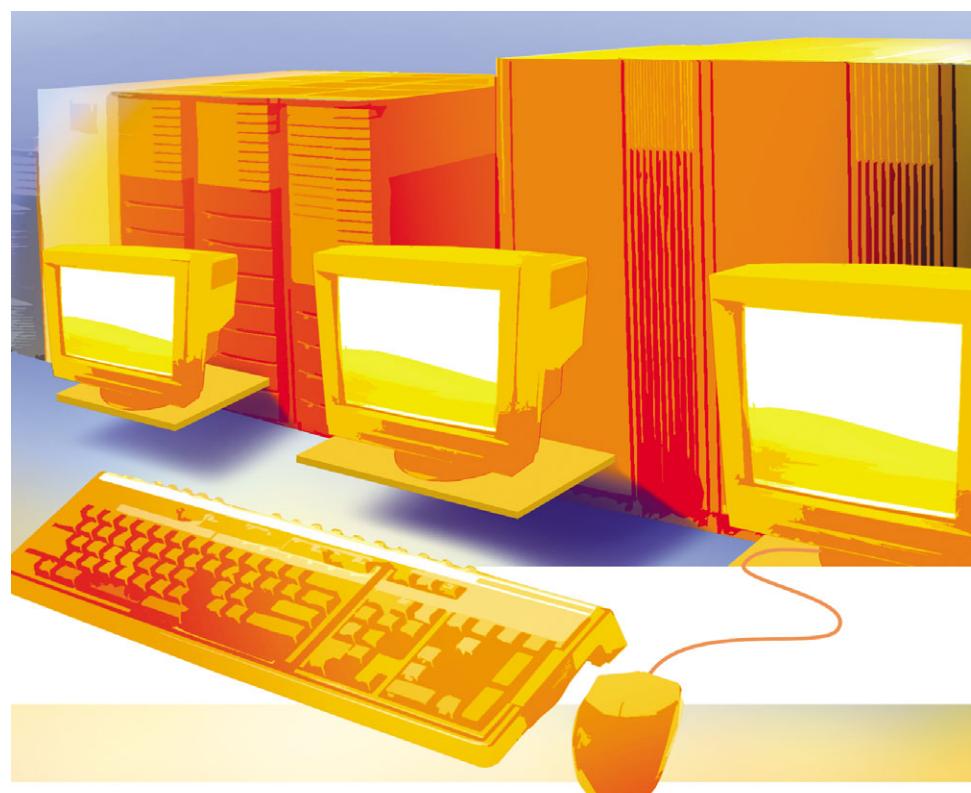
This supplier offers a wide range of rack-mount monitor KVMs and console servers that can fit virtually any need. For example, i-Tech offers rackmount LCDs in configurations ranging from 1U drawer, 2U drawer, CAT5 KVM, combo KVM, and dual slides to keylock, lightweight, military rugged, serial KVM, and widescreen.

On the KVM switch side, i-Tech offers KVM over IP; KVM CAT5; single-, dual-, and multi-user; USB switches; Sun Switches; PS2/USB combo; KVM remote access; and more.

at Avocent (www.avocent.com), small and midsized enterprises tend to follow the same trends in the KVM space that larger

anytime/anywhere access required by today's workforce to maintain the IT systems that are used 24/7. IP access is central to trends such as lights-out data centers, outsourcing, and telecommuting."

The lights-out approach, in particular, has driven many technologies to adopt



enterprises do, and they're also faced with similar challenges.

"IT staff are faced with doing more with less while supporting their company's business initiatives," Helms says. "Companies that utilize analog solutions with local server rooms are looking at how to migrate to an IP solution. Those already with an established IP solution are looking for ways to perform even more tasks remotely to save time and help guarantee more uptime."

Helms says that as server costs decline, smaller companies have stopped standardizing on one platform. As a result, IT must now consider KVM switches that support PS/2, USB, Sun, and serial devices to provide adequate flexibility to support future server purchases. Because highly flexible IT departments generally prove successful, the need for technologies that flex along with that environment is paramount.

"KVM over IP is the predominant KVM technology providing remote access over IP, as well as at-the-rack access," Dominach says. "KVM over IP provides

remote capabilities, and KVM is one of them. Data center managers demand remote access of their data centers from top to bottom, and remote KVM technologies help to deliver that ability. Keith Renty, business and product development manager at ATEN Technology (www.aten.com), explains that remote access is now a must.

"Newer technologies with very minimal latency involving KVM switches allow the system administrator to feel comfortable about the ability to log in to a data center environment securely. [They can] identify a problem shortly after alerted vs. receiving a wake-up call from someone at the office asking them to drive 40-plus miles in the middle of the night to resolve an issue," Renty says.

Console Access Gets Flexible

KVM technologies aren't alone in their move toward a more remote focus, as console access servers also are increasingly implementing this approach. Avocent's Helms says that cost-conscious SMEs recognize the value in migrating to

open-source platforms that require console access servers.

"Just as KVM over IP provided the means for remote management of Windows-based servers, console servers have provided the means for remote management of serially based devices, including Unix, Linux, and Solaris servers, routers, public branch exchange [PBX] systems, and telecommunications equipment, such as CSU/DSU [channel service unit/data service unit]," Helms says.

Dominach says that serial console access is a more secure alternative than in-band troubleshooting tools based on Telnet and SSH services. "These out-of-band remote management solutions establish layers of deterrents to block unauthorized access, which are key for remote management of data centers and branch offices," he says.

Raritan's console access solution hides from hackers' points of entry into remote sites, provides a sophisticated password and authentication architecture, encrypts data, monitors for cases of invalid login and password attempts—from inside and outside the firewall—and sends out alerts.

Future Watch

Keeping on top of KVM and remote access trends might be an accessible feat for many managers, but Helms stresses that it's important for enterprises to consider purchases with the future in mind because products must have the scalability to meet growth-related demands and have flexibility beyond the simple ability to connect. Virtual media, which Helms says was introduced by Avocent into the KVM market in 2005, can help companies grow alongside the inevitable changes they encounter.

"Virtual media support allows the transfer of data that is stored on CDs, USB thumb drives, USB external hard drives, and other media sources between targets," Helms says. "So you can reload a server's operating system remotely after a crash, saving time and travel costs to get a server back to an operational state."

Looking ahead in the KVM and console access space, ATEN's Renty predicts that we'll see an overall increase in KVM installations due to the increase in size of most data centers and/or colocations. He also expects to see continued advancements in remote IP capabilities, particularly as they pertain to security and simultaneous users.

Likewise, console servers will continue to do more, Helms says, and he uses the smartphone as a comparison. "I remember when the first BlackBerry came out, and we all thought these email machines hanging on our belts were the greatest invention," he says. "Now we can make phone calls, open documents, take photos, browse the Internet, and even remotely reboot our server with one device that fits in our pocket. The same is true for switches and console servers." □

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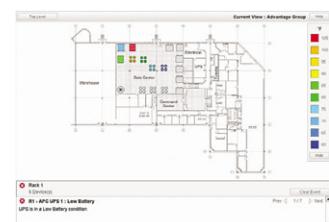
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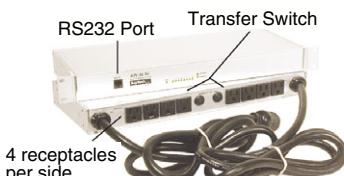
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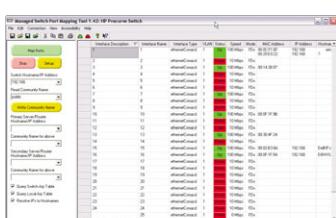
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NETWORKING & VPN



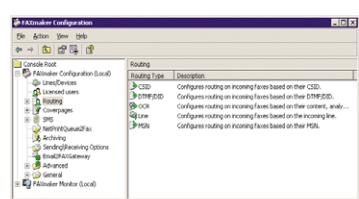
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Product Releases

CLIENTS

■ **Fujitsu** has introduced the fi-6140 and fi-6240 (a flatbed model) color duplex scanners. The high-performance scanners include such features as an advanced document feeding system; automatic, ultrasonic, intelligent multifeed-detection technology; long document scanning support (up to 10 feet); better embossed card-scanning abilities; and continuous feeding of up to three hard cards through the 50-page ADF (automatic document feeder). Additionally, the scanners offer 60ppm scanning speeds and 120ipm (images per minute) at 200dpi monochrome/grayscale and 40ppm and 80ipm at 300dpi full color. The scanners bundle with Adobe Acrobat 8.0 Standard, ScanAll Pro v1.5, and Kofax VirtualReScan 4.1 Professional. The scanners' optical resolution is 600dpi, and both models use dual Ultra SCSI and Hi-Speed USB interfaces. The fi-6140 starts at \$1,995, while the fi-6240 is \$2,495.

■ **IBM** released CDM (Client Data Management) software designed to help financial institutions manage, sort, and access client data that may exist both locally and remotely all over the world. The offering is based on IBM's Information On Demand services, IBM WebSphere Customer Center, IBM FileNet, and IBM Web-Sphere Message Broker. IBM designed CDM to maintain a high level of security, compliance, and privacy for the user organization and its clients. IBM's CDM can assist businesses in cross-selling and targeted marketing, and it can help improve customer service. With CDM, organizations can also use the consolidated client data to develop more personalized products and services.

■ **Kyocera Mita America** introduced the KM-3060 and KM-2560 monochrome MFPs. Both models offer standard network printing, color scanning, and copying capabilities, as well as network faxing, Internet faxing, and a series of document capture and management solutions. The KM-3060 and KM-2560 support 600 x 600dpi resolution with 256 levels of grayscale, standard network color scanning, and output speeds of 30 and 25 pages per minute, respectively. Both models feature an integrated USB Host Interface, which lets users install a USB flash drive at the control panel and print their PDF documents directly from the touchscreen interface. The KM-3060 and KM-2560 offer an optional Data Security Kit that can overwrite and encrypt documents stored on the standard 80GB hard drive. With the optional fax system installed, users can send and receive faxes at the device or from any networked desktop computer. In addition, both models are compatible with Kyocera's optional document solutions, including iTag, KYOcapture Express, and KYOcapture powered by AutoStore.

■ **Psion Teklogix** has re-entered the PDA market with the release of the iKô, a rugged PDA with an integrated imager or scanner, VGA display, digital camera, and the choice of Windows CE 5 or Mobile 6 Classic or Professional operating systems. The iKô includes Wi-Fi, cellular (GSM/GPRS/UMTS [Global System for Mobile Communications/General Packet Radio Service/Universal Mobile Telecom-communications System]), and Bluetooth network connectivity to offer integrated voice and data communications and GPS abilities. The PDA will be available next month.

MESSAGING & TELEPHONY

■ **Digi International** has announced the Digi DialServ, a phone line simulator that is compatible with Digi International's

cellular gateways. With Digi DialServ, legacy devices with incorporated modems can function with cellular IP networks. With DialServ, hardware communicates with a central location in the same way that it would with a physical TCP/IP device. Digi DialServ can be coupled with a Digi cellular gateway to emulate a telco network and convert requested phone numbers to IP addresses. This lets the Digi DialServ provide functionality with dial-in and dial-out applications because the legacy device communicates in the same way that it would with POTS. Together with a Digi cellular VPN gateway/router, Digi DialServ can also produce secure connections.

■ **Incident Collaboration Center, MessageOne's** crisis recovery service, provides a centralized location for communication and coordination during the recovery operations to keep workflow smooth and provide regular progress reports. The crisis notification service features interactive event logs to keep staff up-to-date with real-time reports as tasks are completed. Also, Incident Collaboration Center allows for secure document sharing through password-protected Web portals and features an external communication Web site to keep customers up-to-date, as well.

■ **Multi-Tech Systems** released the SMSFinder SMS Server, which allows any network-connected PC to send and receive SMS messages with its quad-band GSM cellular modem and Ethernet interface. Configuration is also possible from any networked PC via Web interface. Other features of the device include an address book that holds up to 20,000 entries, customizable access rights for users, and support for SMTP client and Syslog.

■ **Polycom** announced the availability of ReadiVoice 4.0, an on-demand audio conferencing service optimized for the technical requirements and operational complexities of on-demand, carrier-grade conferencing. Using the Polycom Proxias platform, ReadiVoice 4.0 is a flexible, carrier-class application that enables service providers to deliver cost-effective rich media conferencing. ReadiVoice is IMS-compliant and is future-focused for on-demand mixed media. The solution contributes greater scalability while helping administrators lower operational costs and protect revenue. ReadiVoice 4.0 utilizes rack-and-stack scalability to meet future conferencing needs. Pricing varies based on capacity.

■ **SearchInform's** IMSniffer intercepts all instant messaging information from various clients (MSN, ICQ, QIP, AIM, etc.) to allow IT managers to monitor employee workflow and control messaging traffic. The program, which consists of a client and server, saves all intercepted messages in a history log in its own database and allows users to search using advanced criteria such as stemming, thesaurus, etc. or search through one employee's message history.

■ **Sonus Networks** released the IMX 2.0, the next generation of the IMX Multimedia Applications Platform. With support for voice-based services, wireless, and video, among other applications, the IMX 2.0 is designed to improve upon its predecessor with a generally streamlined environment and platform. The Web-based IMX 2.0 offering is part of Sonus' IMS (IP Multimedia Subsystem) architecture, which is aimed at next-generation networks.

Product Releases

■ **TalkSwitch** has unveiled its software version 5.0—a free, downloadable software that activates available IP extensions on TalkSwitch VS and 48-CA/CVA models. Systems can then allow 16 local extensions per unit, and it increases the base voicemail memory of VS units by two hours. Remote and teleworking employees can be incorporated into the office phone system because IP extensions can exist inside or out of the office with the software 5.0. It also includes up to three languages for prompts on the TalkSwitch VS series and two languages on the 48-CA/CVA models.

TalkSwitch also released version 1.1 of Attendant Console, designed to work with software version 5.0. Attendant Console 1.1 discovers TalkSwitch systems on the network automatically, giving a comprehensive view of the call queue along with the status of the lines and extensions operating within the system. Drag-and-drop park, paging, and hold, and the ability to monitor call duration and status are all included, as well as the ability to know how long callers have been in the system. Attendant Console 1.1 works with both traditional and VoIP lines and extensions.

Additionally, TalkSwitch has introduced a line of IP telephone handsets, which supplement the existing line of analog handsets. Working as an extension of the office for teleworkers and employees who work from home, TalkSwitch is offering three different models—the TS-480i (offers 14 line appearances), the TS 9133i (offers seven line appearances), and the TS9112i (offers 13 one-touch feature keys). They all allow employees working away from the office to join in ring groups and get access to queues. The phones connect to the same LAN as a TalkSwitch and then are plugged in to the same data network.

Finally, six hybrid IP PBXes were added across each TalkSystem series VS line of small business phone systems. The 248vs, which adds two lines, four local extensions, 12 IP extensions, and eight VoIP trunks, was added to the 200 series. The 288vs was also added to the 200 series, and it features two incoming lines, eight local extensions, eight IP extensions, and eight VoIP trunks. The 400 series added the 488vs, which features four incoming lines, eight local extensions, eight IP extensions, and eight VoIP trunks. An 800 series was also added: The 840vs includes eight incoming lines, four local extensions, and 12 IP extensions; the 844vs features eight incoming lines, four local extensions, 12 IP extensions, and four VoIP trunks; and the 848vs offers eight incoming lines, four local extensions, 12 IP extensions, and eight VoIP trunks.

NETWORKING & VPN

■ **AppSense** released the latest version of its three-component user environment management software, the AppSense Management Suite 7.2. The software's three components include quality of service, system protection, and user profile management. The software offers monitoring and reporting features, as well as user personalization capabilities, and supports local, published, streamed, and virtual environments so users have a consistent, custom work experience on many platforms. The software reduces logon/logoff times, controls application access, manages user profiles, and enhances application response. It is Vista- and x64-ready.

■ **Brocade** has announced the Brocade DCF (Data Center Fabric), an architecture designed to create more streamlined data center connections and to reduce costs.

This architecture includes both storage networking and server-to-server clustering. Brocade DCF is application-driven and policy-based. It can also optimize server virtualization. Brocade also announced the Brocade DCX Backbone for large-scale server virtualization. It supports network protocols such as Fibre Channel, FCoE, DCE, and iSCSI.

■ The latest iteration of the Equalizer Series family of load balancing and acceleration software, Equalizer Series v8.0, is now available from **Coyote Point Systems**. Updates to the software include surge protection for server clusters, compatibility with Akamai, support for Microsoft Web Outlook Access, and HTTP compression, among other features. The software is aimed at SMEs with an emphasis on application availability and acceleration and ease of administration requirements.

■ **DataCore** has announced several products, including UpTempo performance accelerators and Free To Try thin provisioning software downloads. DataCore has also announced that its SANmelody, SANsymphony, and Traveller can now run without hardware on virtual machines that use VMware, Citrix XenSource, Virtual Iron, or Microsoft products. DataCore's UpTempo performance accelerators can help companies improve network performance by reducing slow disk I/O. According to DataCore, UpTempo products typically improve I/O performance by three to four times and can improve I/O performance by as much as 10 times. DataCore has also announced new VIF Acceleration Bundles for incorporating an iSCSI virtual SAN and fault-tolerant shared storage into physical application servers and virtual server systems.

■ **Netronome Systems** announced the availability of its high-performance, transparent SSL proxy, the Netronome SSL Inspector appliance. The SSL Inspector appliance provides up to 4Gbps of line-rate network throughput for 1 million total flows with less than 10 microseconds of delay. The system can support 50,000 concurrent SSL flow states, 2,500 SSL flow setups and teardowns, and 50,000 total non-SSL connection setups and teardowns per second. SSL Inspector increases security while minimizing deployment expenses by removing costly user configuration and network integrations.

■ **Netuitive** released Netuitive Service Analyzer 2.0. The self-learning performance management software for BSM boasts several enterprise-level enhancements and features, including real-time service-level monitoring, which lets administrators tie performance to business metrics by monitoring SLOs (service-level objectives). The software also includes a Multiview Dashboard, which offer business impact, customer experience, and IT infrastructure perspectives. Other features include alarm prioritization for Netuitive Trusted Alarms (based on availability, health, severity, and type) and BSM Topology View, which features a topographical service map that has drill-down capabilities.

■ **Open Text** announced the latest version of Livelink ECM—Enterprise Server, which works with individual workers to improve productivity and drive user adoption in enterprise-wide deployments. By integrating each individual with the organi-

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Product Releases

Continued from Page 15

zation's IT environment, services such as pagination, search, navigation, and results filtering, as well as content caching, allow companies to tend to the individual needs of the worker.

■ **SMC's** SMC8126L2 is more descriptively named the TigerSwitch Standalone 26-port 10/100/1000 Managed Switch with four combo ports. At \$999.99, this high-performance switch with fiber uplink capability offers integrated IP clustering for control of up to 32 switches. Optional 1000BASE-SX, -LX, or -ZX mini GBIC transceivers, which fit the combo ports, range in price from \$99.99 to \$2,804.99.

PHYSICAL INFRASTRUCTURE

■ **Aten** released two dual-rail CAT 5 integrated LCD KVM switches, the KL1508 and KL1516. The company says the 8- and 16-port dual-rail CAT 5 integrated LCD consoles are priced starting at \$2,099 for the 8-port, 17-inch model and up to \$2,599 for the 16-port, 19-inch model. Both products use daisy chain technology for access of up to 256 and 512 computers, respectively. Additionally, Aten says users can expand the KL1508/KL1516 for remote management of servers and data center devices when used with Aten's CN5000 KVM On The NET IP-based KVM control unit. Aten has also announced an LCD console bundle that combines the company's CL1000M integrated LCD console with the CS9138 MasterView KVM. The bundle will run through Dec. 31 and is priced at \$899.95. Further, the company has announced the release of the CE800 USB

Console Extender (\$599.95) and CE250A PS/2 Console Extender (\$279.95), two devices to extend keyboard, video, and mouse signals.

■ **GizMac Accessories** released the next generation of its noise-reducing server racks. According to GizMac, the XRack-Pro2 reduces noise up to 80%. The equipment rack has an air filtration system that simultaneously cools computers and improves noise reduction. The air filters have a pleated design to extend the trapping surface and are reinforced with a metal grid. GizMac is targeting the equipment rack at broadcasting stations, businesses, medical offices, and other environments that require low noise levels or experience high dust levels. The XRackPro2 is available in 12U and 25U models for \$1,899.99 and \$2,349.99, respectively.

■ Now from **Panduit** is the DPoE 1Gig Power Patch Panel. Details are few at press time, but this panel makes it cost-effective to roll out PoE (Power over Ethernet) as a Gigabit Ethernet network or as part of an existing one, the company says. The panel supports the IEEE 802.3af standard, as does Panduit's DPoE Compact 8 Midspan.

SECURITY

■ **LANDesk** released its Management Gateway Appliance, a plug-and-play system that allows systems administrators to maintain compliance of mobile computers and distributed systems outside the firewall. The appliance can manage and inventory laptops and desktops connec-

ting to the corporate LAN from the outside. The \$3,000 device works with LANDesk's other software to find and plug vulnerabilities on mobile devices, monitor software licenses, roll out patches and software distribution, and so on.

■ **Lockdown Networks** has upgraded its Lockdown Enforcer appliance for NAC (network access control). Deployments can now be faster thanks to new optional methods of policy enforcement. Quarantine modes now include secure VLAN and ISQ (IP Subnet Quarantine) for flexibility during the deployment process. The update also expands the appliance's support for Microsoft NAP (network access protection).

■ **Ricoh** announced a security feature to its ELP-EX (Enhanced Locked Print-Extended Edition) document security solution. Designed to protect confidential documents in shared printing environments, ELP-EX now offers an additional layer of security using proximity cards. An optional feature, ELP-EX's proximity card functionality enables users to scan their access cards for automatic login to print their job cache. The proximity cards can establish connectivity with access systems such as HID, NexWatch, and Casi-Rusco. ELP-EX offers the ability to hold a document at an MFP until the authorized user releases it. Compressed, encrypted files also remain securely held even if the hard drive reaches maximum capacity, the power is turned off, or the hard drive is compromised. ELP-EX can be installed and configured on a Ricoh MFP via embedded firmware (Secure Digital card) or remotely via Web Interface.

■ **Sprint** and **Alcatel-Lucent** offer a solution to ease IT headaches and provide control over data maintained on end-user laptops. SprintSecure Laptop Guardian enables 24/7 security through remote monitoring, location, and locking if a laptop is lost or stolen. All capabilities are delivered over the air to the laptop anywhere on the nationwide Sprint Mobile Broadband network. The solution utilizes a unique Mobile Broadband connection card that serves as a two-factor authentication device. The card itself is an ignition key; the user must insert the card into the laptop to gain access. An IT administrator can use the same card to revoke authentication privileges remotely. The Alcatel-Lucent OmniAccess 3500 Nonstop Laptop Guardian powers SprintSecure Laptop Guardian. In addition to security of corporate data, SprintSecure Laptop Guardian offers management and control features, such as laptop status information, policy enforcement and usage information, laptop location through GPS, and over-the-air software distribution.

■ **St. Bernard Software** introduced MERS (Managed Enterprise Reporting Service) for iPrism Web-filtering appliances. MERS is an appliance and managed services combination that provides onsite security, as well as a hosted service for the backup of reports and data. The appliance enables St. Bernard customers to run multiple iPrism appliances across different locations, while MERS aggregates, centralizes, and remotely archives usage reports. The hardware appliance provides onsite prevention of inappropriate online employee activity, and MERS stores the data at St. Bernard-managed data centers. For companies with

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Product Releases

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■ **Symantec** released Symantec Database Security 3.0, security software that helps companies prevent the loss of sensitive information and intellectual property stored in databases. Version 3.0 includes an intruder identification component, built-in heuristic learning capabilities, real-time transaction policy alerts, and integration with Symantec Security Information Manager. Intruder identification allows customers to trace malicious or suspicious activity to the source, remediate the problem, and prevent the offending user or IP address from attacking again. The heuristic learning capabilities can automatically recommend SQL behavior patterns that align with internal IT policies, such as mergers and acquisitions, legacy application implementation, and software phase-out. Real-time policy alerts let database administrators monitor and correlate inbound and outbound database traffic with real-time alerts.

Symantec also announced the addition of Network Infection Alerts and Brand Protection Alerts to Symantec's DeepSight Services. Network Infection Alerts monitor the Symantec Global Intelligence Network for malicious activity coming from a specific IP address range, such as a company's Web site. Additionally, Network Infection Alerts provide the required details for IT staff to locate the infected machine and begin the remediation process. Brand Protection Alerts notify customers when phishing sites are identified that spoof the brand name, and DeepSight provides

actionable security intelligence to help businesses respond to threats. The Brand Protection Alert provides details such as the IP address, as well as dates and times for the phishing site's activities. DeepSight added RSS capabilities to the service.

STORAGE

■ **ATTO Technology** has introduced the ExpressSAS H380 and ExpressSAS H308, two host adapter products. The company says the addition adds cost-effective, entry-level connectivity solutions to the product family, while also providing high-performance data access for applications in DVA and IT infrastructures, including hi-def video post-production, digital film production, digital prepress, tape backup, audio production, email compliance, data warehousing, data mining, and transaction-based environments. The adapters use PCI Express and 3Gb SAS technology to offer data transfer rates up to 300MBps per port. Additionally, the integration of Advanced Data Streaming Technology and the use of Intel IOC340 I/O SAS chip technology let the adapter manage latencies and control acceleration of data transfers for optimal performance. The H380 includes two external x4 MiniSAS SFF8088 connectors. The H308 uses two internal x4 MiniSAS SFF8087 connectors.

■ **Finisar** has announced the Xgig 8G Fibre Channel Load Tester. The new load tester can test, analyze, and validate Fibre Channel SAN hardware performance. It can analyze a wide variety of hardware, including chips and large-scale systems.

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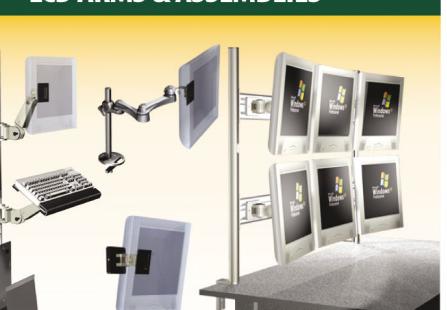
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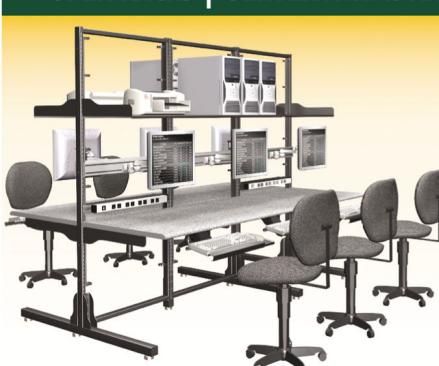
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Product Releases

Continued from Page 17

The Xgig 8G Fibre Channel Load Tester for SANs offers fully integrated SAN fabric validation with protocol analysis. It also features a simple GUI and supports 1, 2, 4, and 8Gbps data rates. It is scalable to 64 ports. Pricing for the Xgig 8G Fibre Channel Load Tester starts at \$50,000.

IBM introduced several enhancements for the IBM System Storage DS8000 Turbo series, an enterprise disk storage system designed for medium-sized to large businesses. The DS8000 now features IBM FlashCopy SE for making snapshot backups of critical data. Other options include Dynamic Volume Expansion and Storage Pool Striping, which enables customers to speed data access and processing through high performance data placement. IBM also launched the System Storage Productivity Center, a centralized control console that lets IT staff manage the storage environment and configure individual storage appliances. The IBM System Storage DS8000 Turbo series enhancements will be available next month. IBM FlashCopy SE starts at \$6,500. The IBM System Storage Productivity Center will be available this month starting at \$7,500.

IBM also launched an IBM System Storage N series VFM (Virtual File Manager) in Enterprise and Migration Editions. Designed for midsized to large organizations, VFM lets users manage local and distributed unstructured file data and supports virtualization in Unix, Linux, Windows file servers, and IBM N series products. IBM also unveiled several features for the IBM Virtualization Engine TS7520 tape platform, including

support for 750GB hard drives and enhanced scalability with a maximum capacity of 1.3 petabytes. The TS7520 now features support for IBM's encryption-capable LTO Gen 4 tape drives. IBM System Storage N series VFM Enterprise and Migration Editions are starting at \$2,000 and \$1,200, respectively. The enhanced IBM Virtualization Engine TS7520 will be available next month starting at \$105,000.

Finally, IBM announced several improvements to its line of storage products designed for small to midsized enterprises, including IBM System Storage DS3000, DS4000, and System Storage TS2240 Tape products. The DS3000 series now supports SATA hard drives, IBM System p servers, and IBM BladeCenter Power blades. Several products in the DS4000 series received improvements, including support for RAID 6, support for greater than 2TB volumes, up to 64 enhanced remote mirror pairs, improved cache utilization, and support for up to 128 storage partitions. IBM also announced the System Storage TS2240 Tape Drive Express Model LTO 4 Half-High, a tape storage device that offers 120MBps native data transfer rate and up to 800GB of capacity. The enhanced IBM System Storage DS3000 and DS4000 platforms will be available next month and in February at \$4,500 and \$11,500, respectively. The IBM System Storage TS2240 will be available this month starting at \$4,500.

MPC Computers launched the MPC DataFRAME 2112 Storage Area Network Appliance. The DataFRAME 2112 provides a SAN platform for high-speed,

disk-based storage, which also includes built-in high availability and disaster recovery features powered by FalconStor IPStor software. The DataFRAME 2112 can support SATA II and SAS drives with capacities of up to 1TB each. The unit houses 12 drives enabling storage growth of up to 12TB in a single 2U shelf, with additional expansion shelf capacity. The DataFRAME 2112 is built upon the latest Intel architecture and the upcoming quad-core Intel Xeon processor and 5400 series based on 45nm technology.

Pivot3 released Pivot3 RAIGE (RAID Across Gigabit Ethernet) 2.2, a high-definition storage platform. According to Pivot3, this version of the video surveillance operating system increases capture capacity by 60% over the prior available configurations, reduces subscriber power consumption, and supports 1TB hard drives. The OS runs on Pivot3 High-Definition Storage systems that work with Databanks (networked storage nodes). Customers can add more than 100 Databanks. Pivot3 makes RAIGE 2.2 available to existing customers and offers a model with 12 1TB drives for \$35,900.

Sans Digital released two storage devices, the EliteRAID ER104I and MobileRAID MR4I. Both devices support up to eight hot-swappable hard drives with 1TB each of storage space and can be used as DAS or for SAN storage. Designed for flexibility, the EliteRAID ER104I and MobileRAID MR4I also feature dual Gigabit Ethernet ports with transfer rates of up to 200MBps and can protect against up to two hard drive failures.

StoneFly released two IP SANs: the ISC (Integrated Storage Concentrator) 801 and HSC (High-Availability Storage Concentrator) 1601. The ISC 801 is designed for SMEs that need to transition from direct-attached storage to an entry-level IP SAN. The ISC 801 is an "IP SAN in a Box" that features centralized storage management and integrated business continuity, as well as support for eight drives and up to 4TB of storage. The HSC 1601 is designed for organizations in need of maximum data protection. It supports 10Gb Ethernet and StoneFly's field-tested clustering technology to offer mirroring at the hardware level. The HSC 1601 can support 16 disks and capacities ranging from 150GB to 1TB, so customers can install up to 16TB in a single chassis.

StoreVault introduced the StoreVault S300, an all-in-one storage product for small and medium-sized enterprises that is now available starting at less than \$3,000. StoreVault says the S300 provides data center technology features such as advanced security, scalability, data protection, and data management. The S300 is aimed at IT generalists in Windows-centric smaller companies that need 1 to 3TB of storage and have five to 15 servers. Other features include StoreVault-to-FAS replication, which enables replication from StoreVault to existing installed NetApp FAS enterprise solutions; StoreVault Manager 3.0, a Windows-based utility for providing additional software licensing and management; advanced data protection via StoreVault Advanced Protection Architecture; and platform flexibility to handle virtualization, NAS, and SAN functions.

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Concrete Results In A Virtual World

Virtualization created with VMware is the latest fad in the IT industry, but the concept of virtualization has a long history in storage. Storage has used artificial constructs representing a storage system in order to reduce the physical complexity of the individual storage devices in many ways and for some time. For instance, disk drives present a logical address for the system to access data rather than the actual physical address. The controller in the drive automatically does the physical-to-logical translation, making access of the data on the drive easier.

Likewise, RAID spread the data being stored in a drive array among the disks to increase data reliability, improve performance, and turn the array into a single storage volume to the server that is accessing the array. Even further levels of virtualization can be used to create sophisticated pools of storage out of collections of disk drive arrays. These storage pools allow integrated management, automatic policy generation to handle most tasks, and in general make managing the storage in an organization much easier. Without virtualization of storage, the costs of hiring enough people to manage storage would be unsustainable.

Virtualization For The Rest Of Us

Given the history of virtualization in the digital storage environment, it should come as no surprise that storage behemoth EMC is the primary investor in VMware (EMC recently sold about 10% of its investment in

a recent IPO). VMware allows the extension of virtualization strategies to include other IT resources. By creating integrated pools of resources, including servers as well as storage, fewer IT managers can manage more resources. Furthermore, because these resources are treated as pools, they can be used more efficiently, and thus fewer resources are required to service an organization's applications.

Integrated management can result in more efficient utilization by allowing departments and other users of resources to work off a common resource pool rather than having fixed resources that must be greater than actually used to provide for possible expansion. When such over-provisioning is done over a large organization, the total amount of excess resources can be considerably more than twice what is actually used.

With a common resource pool, an IT manager can better manage the total surplus resources of the larger entity and hence avoid excessive over-provisioning. In practice, over-provisioning can often be reduced by 50% or more. This is a significant savings in hardware and a savings in the operating expenses of running and cooling extra unused storage and server resources. With such a net savings of hardware costs and a

reduction in operating expenses, virtualization makes a lot of economic sense.

On A Virtual Day You Can Certify Forever

With the rise of VMware as the preferred centralized software management platform for virtualization of IT resources, storage vendors are jumping on the VMware bandwagon. Everyone is getting VMware-certified, and despite major funding by EMC, VMware offers open certification to all

TOM COUGHLIN

AUTHOR
Tom Coughlin is the author of numerous authoritative reports on digital storage and its applications. He is also the founder and organizer of the annual Storage Visions Conference (www.storagevisions.com) and lead consultant for Coughlin Associates, which provides digital storage technical and market analysis and consulting services. Coughlin is a frequent writer and international speaker on digital storage and storage applications. You can find out more about him at www.tomcoughlin.com.



comers. At the recent VMworld conference in San Francisco, storage hardware and software vendors used about 40% of the vast exhibit area. It was an interesting collection of companies large and small that want to be part of this growing market. At the end of September, VMware opened up certification of storage products.

IBM's storage virtualization solution, IBM System Storage SAN Volume Controller, has been certified by VMware. In addition, EMC, Hitachi Data Systems, HP, and NetApp have signed on to be certified. Most other storage vendors will probably want

their products VMware-certified to access the rapidly expanding VMware market.

Saving Money & The Environment

One nice thing about these virtualization schemes is that besides saving money by reducing the need for ever-expanding IT managers, the amount of hardware required, and the operating costs of data centers, this technology may be good for the environment. By reducing the power to run and cool hardware, the amount of fossil fuels burned to supply the electricity can decrease.

Digital storage uses lots of power both to run the disk drives and other storage resources and to remove the heat that results from running the disk drives and the servers that use them. Storage virtualization combined with other technologies in storage systems for better resource utilization such as deduplication and MAID reduce the hardware that might otherwise be needed in a data

center (or in the case of MAID, reduce the amount of power actually used by a given number of disk drives) and hence reduces the amount of hardware that must receive power and whose waste heat must be removed.

VMware has enabled virtualization of data centers to a level that had not existed before. This management software appears to have become a standard for unified data center resource management, and thus it is a technology IT managers will want to exploit. **P**

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Monitoring Your SME

Strategies & Tools For Protecting Against Employee Data Theft

by John Brandon

DATA LEAKAGE IS A SERIOUS problem in IT. According to research group IDC, employee theft of company data is more common than hacker intrusions or viruses that break into financial systems. One IDC study shows that 84% of all data leakage can be attributed to employees. And as the methods for stealing data increase, including USB key drives, torrent uploads, and instant message file transfers, companies should be more prepared than ever to monitor and prevent these activities.

Multifaceted Strategy

As with any security threat, the best approach is to develop a multifaceted action plan involving company policies

Monitoring Products

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Palisade Systems PacketSure

Analyzes outbound traffic for financial and other sensitive data
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Pearl Software Echo Suite

User-level monitoring of Internet traffic
www.pearlsw.com

Secure Computing Webwasher

Monitors and selectively blocks IM, P2P, and Web content
www.securecomputing.com

Voltage Security Data Protection System

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Vontu Network Data Monitoring & Prevention

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that are stringently enforced, robust encryption and authentication for all devices that connect to the network, and monitoring software that protects against data leakage.

In terms of policies, a good place to start is with setting standards for approved devices. Standardization on one particular smartphone model (and "outlawing" other devices), enforcing policies for network authentication (such as requiring that all laptop users log in with a fingerprint reader), and making it clear to employees that, say, USB key drives are not allowed are all good first steps.

"Organizations should create a culture that helps support employee compliance once data security policies have been implemented," says Steve Roop, a spokesperson for Vontu (www.vontu.com), a data loss prevention and monitoring company. "To do that, companies need to create and communicate data security policies, establish remediation processes, implement data loss prevention technology, and offer continuous employee education to reinforce policies once they are in place."

For security encryption, using the highest level of security for wireless LANs, a VPN for remote workers, and virus- and spyware-scanning appliances go a long way toward preventing employee data theft because a secure network discourages employees from stealing data from an open network. However, even an airtight network can be compromised by either an employee who knows the login for a given network and is intentional about data theft or an employee who inadvertently downloads data to a local device, exposing it to other employees or outsiders who can then access the data.

"So many organizations today are trying to rely on policies," says Paul Henry, the vice president at Secure Computing (www.securecomputing.com). "While policies are an important first step, they don't stop mistakes or intentional abuse. You need technology solutions to enforce policy and catch mistakes as well as intentional abuse."

Monitoring Options

Monitoring employees for data theft is a fairly complex endeavor. Software and appliances from Vontu, Secure Computing, Palisade Systems (www.palisadesys.com), Voltage Security (www.voltage.com), and Pearl Software (www.pearlsw.com) offer features that go well beyond simple email

monitoring to make sure employees are not transmitting company financials.

Secure Computing products such as Webwasher can decrypt remote SSL-protected sessions, monitor instant messaging chats and Web email, and even scan an Internet cache. "If you control the data path, like Secure Computing does, then you can prevent the data from getting into the wrong hands," says Henry. "The software used must monitor all protocols and must be able to decrypt SSL to apply policy. Most products just monitor Exchange and don't handle Web-based email, cache, and other protocols. You have to monitor everything."

but do not have a comprehensive monitoring system.

"Having a content-aware solution is absolutely key because without having visibility into the actual content, all you can really accomplish is the detection of a certain type of file or device, which does not tell you whether or not that file or device contains any unauthorized data," says Roop. "Effective solutions must focus on the data itself, not just the container it's in."

Voltage Security's Data Protection System is another method of assisting companies in the fight against data leakage through employees, either for malicious

For security encryption, using the highest level of security for WLANs, a VPN for remote workers, and virus- and spyware-scanning appliances go a long way toward preventing employee data theft.

Palisade Systems' PacketSure is a monitoring appliance that examines all TCP/IP and UDP data, blocking traffic at the edge of the network using 140 signature rules that you can customize. PacketSure works like a virus protection system in that it watches for certain kinds of data, such as health records or company financials, and data can be quarantined until further action is taken. PacketSure can also watch for credit card numbers, structured content that matches a company database, and all SMTP email.

"Companies have not done a good job of developing policies and training employees on what is acceptable in transmitting data," says Kurt Shedenhelm, the CEO of Palisade Systems. "That is why the majority of data breaches are noncompliance of HIPAA and GLBA. Electronic monitoring of network communications and content is relatively new over the last couple of years. We can monitor content leaving the network, leaving the PC, and private data at rest on PCs where it shouldn't be stored."

Vontu offers a robust data leakage prevention system for protecting file servers, databases, and other endpoints such as Microsoft SharePoint and Lotus Notes. It monitors and protects against theft by email, IM, the Web, FTP, P2P, and generic TCP transmissions. Vontu's Roop says that some data leakage prevention products focus on just one or two of these areas, such as email or instant messaging,

reasons or by not following company policies. "Through encryption of data we ensure that unauthorized access is not possible, and all authorized access is tracked and logged," says David Thompson, product manager. "It is also true that if an activity is monitored (such as the access of data via decryption), then even if it is possible for a potential thief to gain access to valuable data, the knowledge of the audit trail can also be a very powerful deterrent."

One final option for analyzing data traffic in and out of the company is MessageGate (www.messagegate.com), which specializes in email governance to make sure the most common portal for data leakage is controlled. MessageGate provides detailed reporting for email data leakage for specific kinds of content (such as financial reports) and by individual users. □

Security Best Practices

- Encrypt data for all network activity
- Create policies for approved devices and hardware
- Install monitoring software that scans all endpoints
- Track email, Web mail, P2P, and IM

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PRODUCTS AT WORK

Keeping The Fax Convenient

How A National Shipping Company Has Integrated Fax Server Software Into Its Key Business Processes

by Kurt Marko

IN THIS ERA OF Lilliputian smartphones, BlackBerrys, and iPhones offering ubiquitous email and instant messaging, fax might seem a quaint, retro technology that was retired with the disco balls and VHS tapes. But to many businesses fax is still an important, efficient, and reliable means of communication—far faster than the Postal Service or even FedEx, while more prevalent and easily accessed than email. While fax functionality is common on a multitude of multi-purpose printers, large-volume transmission is best done via fax servers with dedicated software. 21st century fax servers are fully integrated with

the most common email platforms and enterprise directories, and many expose APIs (application program interfaces), allowing users to integrate fax capability with custom applications. The customizability of FaxCore's (www.faxcore.com) server proved instrumental in winning a new customer in the shipping and logistics business whose business processes have tightly interwoven faxing into day-to-day operations.

Founded in 1982, Gold Star Transportation is a third-party freight brokerage and logistics company that arranges for truckload, flatbed, and refrigerated shipping for more than 10,000 customers nationwide, including some of the largest manufacturers such as Coca-Cola, Cargill, Proctor & Gamble, and ConAgra. Acting as a liaison between shippers and truckers, communication is a cornerstone of the company's operations, with fax being its primary means to distribute contracts and orders. According to Corey Behrends, systems administrator and IT jack-of-all-trades at Gold Star, Internet-based communications aren't yet common with the company's client base. "Fax is still huge in the transportation industry," he says. "Many companies we deal with do not have Internet or email, so fax is the best option to communicate and confirm orders."

Challenges

Upon embracing fax as a key communication path, Gold Star developed a custom application used to book orders and confirm shipments. Its standard processes require two faxes to confirm an order and coordinate shipment. During the past 10 years, the company has refined its software, now relying on it to send 100 to 200 faxes a day using a fax server with five to six dedicated phone



lines. Gold Star recently standardized on PDF for all documents and needed support for faxing native PDFs, without conversion, in the latest iteration of its software.

Unfortunately, the company's previous fax server didn't accommodate PDFs, thus prompting Gold Star to evaluate alternatives. In order to eliminate a number of manual steps used to send and perform status checks, Behrends also wished to more tightly integrate various fax features into the application, which prompted the hunt for a product with an easy-to-use API and PDF capability that also wouldn't break the bank.

Potential Solutions

Given the level of integration Behrends was trying to achieve, a rich programming API was critical. This attracted him to FaxCore because it uses the .NET platform, which simplifies programmatic access and is designed to easily integrate into a customer's overall document delivery and management infrastructure. He investigated other fax products with extensible APIs, but most exposed their features using low-level C libraries that are much harder to use than .NET. Behrends also found that with many of these higher-end products, API access is an added feature that is sold as an expensive option.

How The FaxCore Solution Works

After deciding on FaxCore's server, Gold Star's implementation and integration went smoothly—"fairly straightforward," according to Behrends. FaxCore and its local VAR (value-added reseller) performed most of the server installation and configuration remotely and had the system operational within a couple hours.

Behrends' next task was integrating its custom application with the FaxCore engine. "We quickly rebuilt the faxing interface of our .NET application to allow faxing to the FaxCore API," he says. "We also created an interface within our application to import the fax images out of the FaxCore system and export them into our document management system." Behrends adds that the entire port took less than a week, and although he notes a few features and APIs he would have liked in FaxCore's server, the omissions were nothing major. While the installation and port went smoothly, Behrends did have to rely on FaxCore's expertise on occasion.

"When I call technical support, I am always pleased with the short wait time and knowledgeable agent who really knows their stuff. Our previous fax server provider's technical support did not meet our needs," he says.

In summing up the project, Behrends says he's achieved a solution that met his goal of completely automating the faxing process while giving his users the ability to monitor fax status in real time. Behrends notes that because the FaxCore server is integrated with both Gold Star's custom app and its Microsoft Exchange email system, it's very transparent to end users. "It makes the [faxing] process much more like sending email," says Behrends, adding that because the FaxCore email integration is so tight, users sometimes don't even realize whether they are sending documents by fax or email.

Benefits & Results

Behrends has been pleased with the reliability and scalability of FaxCore's product. He says that sending a mass faxing to all of Gold Star Transportation's 10,000 customers didn't stress the server a bit. Using the company's half-dozen dedicated fax lines, the entire process took a couple of days, but the FaxCore server handled message queuing and busy signals with aplomb.

The enhanced application integration and transparency afforded by FaxCore's server is saving Behrends' users a significant amount of time on their faxing chores—savings that have a measurable improvement on

employee productivity and the company's bottom line. "Without automated faxing, our users would be forced to manually fax everything," he says. "We estimate it takes approximately 15 minutes to process a paper-based fax, including the time to print, walk to the fax machine, and wait for a confirmation. At an average of 150-plus faxes per day, traditional faxing translates to 37 man-hours, which is very costly. With our ability to send faxes automatically via FaxCore, we have significantly reduced the processing time from 15 minutes to about 15 seconds"—automation that Behrends estimates saves the average salesperson an hour a day.

Future Plans

As with voice systems, one of the trends in fax server infrastructure is replacement of dedicated POTS (plain old telephone service) lines with an Internet connection. Conceptually similar to VoIP, FoIP (Fax over IP) converts fax transmissions into data packets, allowing them to be transmitted like any other Internet traffic. Behrends says that Gold Star is deploying a new Cisco IP-based phone system that the company is eventually planning to integrate with its FaxCore server. "Once our IP phones are deployed, we are looking forward to integrating them with FaxCore to offer our users a converged communications environment using the product's dynamic FoIP capabilities," he says. Behrends adds that Gold Star's existing fax server has relatively new Cantata Brooktrout fax boards (www.cantata.com), which, in his experience, last six to seven years and currently provide adequate capacity for the company's fax demand; thus, he's in no hurry to make the switch. □

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Trimming Off The Storage Extras

Is Data Deduplication The Right Approach?

by Chris A. MacKinnon

THE AMOUNT OF DATA is growing very quickly. Gartner estimates that an average site doubles its data every six to 18 months. And last year, the worldwide storage service market was worth more than \$25 billion. Gartner also says this year that CAGRs (compound annual growth rates) for storage services might reach 8% from 2005 through 2010, which translates the worldwide opportunity to almost \$33 billion by 2010. We've known for a while that the amount of data has been growing, but what does this mean for the small to midsized enterprise?

And how do we manage this kind of growth rate and not compromise performance at the same time?

Loop Dedupe

Data deduplication is one technology that is getting attention these days. In a nutshell, data deduplication technologies aim to reduce the amount of duplicate data that is backed up and then moved to storage. These technologies grab and eliminate the duplicate data and reduce the resulting storage requirement significantly.

However, people on both sides of the fence are arguing whether data deduplication is the best or right approach. One of the biggest issues seems to be whether deduplication really reduces backup windows or saves money. Richard Heitmann,

vice president of product management for EVault (www.evault.com), says while many view deduplication as a panacea for SMEs, it addresses but a part of the overall problem. "In the context of data protection," Heitmann says, "data deduplication is an important component of a data reduction strategy to minimize bandwidth or storage needs, especially when SMEs consider offsite protection."

Heitmann says data deduplication is best when it reaps a high level of resource efficiency without affecting business objectives (such as application uptime or RTO [recovery time objective]) and when it is part of a scalable, easily manageable, cost-effective solution for the entire SME.

W. Curtis Preston, vice president of data protection services for GlassHouse Technologies (www.glasshouse.com), says when it comes to disk space, data deduplication certainly makes sense. He says, "It absolutely reduces the amount of disk needed to store backup data on disk, and storing backups on disk absolutely makes backups easier and quicker to do."

The Right Approach

Preston says data deduplication comes in two flavors: software (or source) and hardware (or target). He says target data deduplication can be rather expensive for small companies, as the appliances tend to start around \$25,000 apiece. "Software data deduplication, on the other hand," Preston

says, "can be a lot less expensive. And software data deduplication can be even less expensive if you buy it as a service." Preston says software data deduplication is available for less than what most people think each month. He believes that software data deduplication is better for the small to medium-sized enterprise.

So for enterprises that choose to implement some sort of data deduplication, what is the best strategy for implementation? Heitmann says SMEs should consider a data protection solution that meets their business needs for application uptime, recovery time, manageability, offsite data retention, and cost. He elaborates, "When considering data deduplication options, not all are created equal. For example, inline data deduplication hurts performance and extends the backup window as processing time is increased, impacting normal business operations."

Heitmann says EVault's patent-pending DeltaPro technology already reduces data by compressing and encrypting only new

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Dedupe Customer Benefits

COPAN Systems (www.copansystems.com) says data deduplication offers advantages.

According to the company, the two major benefits of data deduplication are:

- The reduction of data across the network
- The reduction in the end state storage requirements

It also notes, however, if data deduplication is not implemented correctly, the solution can create serious issues, including:

- Network performance issues
- Creation of a single point of failure
- Potentially unrecoverable data loss

Pros & Cons

W. Curtis Preston, vice president of data protection services for GlassHouse Technologies (www.glasshouse.com), gives the pros and cons of data deduplication.

Pros

- A massive reduction in storage needed to store backup data (up to 20 times less)
- Enables easier offsite replication of backup data
- Could have onsite and offsite backups without using tape

Cons

- Some data deduplication methods can slow down backups
- The technology is still new to the world
- Many unknowns and FUD (Fear, Uncertainty, and Doubt) in the industry



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Improve Your Help Desk's Efficiency

SMEs Can Focus On Automation, Service & Common Sense

by Sandra Kay Miller

THE HELP DESK IS an integral part of any organization, regardless of size. But for small to medium-sized enterprises that lack the financial and personnel resources of larger enterprises, the help desk is often little more than an afterthought for the IT department. Despite the lack of revenue generation, an efficiently operated help desk can result in productive employees and satisfied customers—always a positive addition to the bottom line.

"When we look at small to medium-sized businesses, generally there are two to five analysts who will be supporting the users, or it might be outsourced externally," says Rajeev Shrivastava, senior director of product marketing at SupportSoft (www.supportsoft.com), a global provider of help desk software and services for the automation of technology problem resolution.

However, you can take some simple steps to optimize help desk efficiency.

Self Service & Assisted Service

Lacking a big budget means that SMEs don't generally install a lot of self-service or proactive IT support solutions, but according to Shrivastava, there are two areas where smaller organizations can make a huge impact on the quality of their help desk efficiency: self-service and assisted service.

Shrivastava sees the greatest opportunities to hasten help desk operations through improvements to assisted services. For example, most help desk calls begin through telephone contact, which means the user contacts a help desk analyst who must not only discuss the issue but also ask numerous questions regarding the user's system, application, operating system, the service pack installed, the machine's configuration, and anything else required to walk the user through the steps to resolve the problem. If the analyst cannot resolve the problem via the telephone, he may then have to physically access the user's system.

But if the help desk had the tools to automatically capture the requisite information, the time spent verbally collecting specifics could be better spent troubleshooting the problem. "If you think about those calls, they are typically 10 to 15 minutes' duration. If you can knock off three to five minutes off each call, then suddenly you can handle 60% more volume and can be more productive in a small organization," notes Shrivastava.

Saving even more time are applications, such as SupportSoft's Accelerator, which offers self-service tools that allow users to resolve their own problems without the involvement of help desk personnel. It's important to keep in mind that any self-service solution is only as good as the content. "If you only have a few pieces of content, it's

unlikely that you are going to be solving lots of problems," says Shrivastava, who points out that for a self-service solution to be productive, there needs to be sufficient content and functionality for users to help themselves. "At a smaller company, if you don't have a lot of time and resources, then you are better off trying to improve your phone support or assisted support experience and then gradually deploying self-service," he says.

Numara Software's Track-It! (www.numarasoftware.com), BMC Remedy Service Desk (www.bmc.com), and HelpSTAR (www.helpstar.com) also provide help desk solutions for organizations ranging in size from 100 to 100,000 users.

Still worried about spending money on a commercial help desk solution? Open-source options, such as Trouble Ticket Express (www.troubleticketexpress.com), are another alternative. This freely available software for the open-source trouble ticket system implements Web-based CGI scripts for a variety of features, including bug tracking, customer support, project management, and to-do lists.

Common Sense

An intelligent approach toward help desk operations increases effectiveness. Smaller organizations can recognize when processes are being duplicated, but for larger enterprises, especially with multiple locations, duplicative help desk operations can quickly generate additional costs. Centralizing help desk functions will improve consistency and efficiency and lower costs.

Listening day after day to users complain that their systems aren't working can wear down even the steeliest of help desk analysts. Help desk turnover has the potential to be an incredible drain on both the budget and efficiency. According to Help Desk Software, a clearinghouse for help desk resources, "The cost of recruitment (which includes management time to review resumes and engage in an interview process), training, lost productivity while a new employee is learning the ropes, coupled with the cost of temporary personnel to fill the gap between old and new employees, can cost between 75 and 150% of a help desk professional's salary." Companies can bank on savings from long-term help desk employees through investments in extra training, professional certifications, and flexible hours. **P**

Strategies For A Successful Help Desk

- ✓ **Start with a goal.** Define what the help desk will ultimately provide.
- ✓ **Take small steps.** Don't try to implement everything at once.
- ✓ **Define your customer.** Understand what types of users and applications will require support.
- ✓ **Hire skilled people.** No one wants to call the help desk when it is staffed with less-than-knowledgeable people.
- ✓ **Have a good attitude.** Similarly, no one wants to deal with help desk staff who are rude or arrogant.
- ✓ **Automate.** Streamlining repetitive processes will increase efficiency.
- ✓ **Limit turnover.** Constantly hiring and training new staff is not only expensive, but it also reduces effectiveness.
- ✓ **Eliminate redundancy.** Defining a standard process for how users request help can eliminate needless duplication of services.

Trimming Off The Storage Extras

Continued from Page 25

and changed data at the block level to optimize performance over the WAN. He says, "New fully integrated data deduplication technology further enhances the benefits of DeltaPro by eliminating redundant blocks of data within backup jobs held in storage, increasing the customer's return on storage resources without compromising performance, scalability, or requiring an appliance."

Preston says the best strategy for data deduplication implementation would be to test, test, test. He says, "Test all short-list

candidates with your own data. It is important to test backups and recoveries for at least as long as you plan on keeping backups on the target (for example, 30 days or 90 days)." Preston says it is important to test with all the data that you plan on storing in it.

To The Bank

And the money issue? Do data deduplication technologies actually save money? Heitmann notes, "Best-of-breed data protection solutions, such as EVault's SaaS (software as a service) and licensed software, do. Data reduction and deduplication assures

that only new and changed data blocks are sent and stored as part of the backup. This reduces the amount of bandwidth and storage consumed for backups without negatively impacting the RTO (recovery time objective) or manageability of the solution."

Heitmann says EVault offers cost-effective solutions for enterprises through a single-vendor, fully integrated solution, which is easy to deploy and manage and protects the entire enterprise. Additionally, he says patented and patent-pending technologies assure data integrity and security while minimizing storage and bandwidth needs.

For those SMEs that decide data deduplication isn't the best approach, other options are available. Preston says, "If you don't use data deduplication, you basically have two choices: The first is to store only a little bit of backed up data on disk

or secondly, to spend a whole lot more (about 10 times the amount) on disk."

Heitmann says if you decide that data deduplication isn't the best approach, select a vendor that does not force you into data deduplication. He notes, "The EVault Unified Recovery Platform powered by InfoStage 6, for example, provides this option to customers, who can take advantage of data deduplication if it meets their needs, but it is not an all-or-nothing solution."

According to a recent study by technology industry analyst The 451 Group, data deduplication is an important emerging technology that is remodeling the enterprise data-protection market. The group says the data deduplication market has seen revenue jump to \$100 million over the past three years. Not too shabby for a technology causing so much discussion. **P**

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WHAT'S HAPPENING

Power Supplies For Powerful Systems

Seasonic Focuses On R&D Engineering For Silent, Efficient Solutions

by Julie Sartain

• • •

DID YOU EVER NOTICE THAT, in addition to the noise, the lifespan of many power supplies was never equal to the shelf life of the computer? In today's busy data centers, a noisy, inefficient power supply with a life expectancy of five years or fewer is much more than an inconvenience; it's an annoying, costly environmental hazard. One company, Seasonic (www.seasonic.com), headquartered in Taipei, Taiwan, has developed a product solution that's efficient and silent, and it's also environmentally safe.

"Seasonic's products are well-known as the most silent and efficient power supply units (PSUs) in both the SI [system integration] and retail markets," says Kevin Han, IT manager at Seasonic. "Our products (patent pending) are more inaudible than others because of Seasonic's new fan control concept; we call it the Smart & Silent Fan Control (S2FC)."

According to Han, this concept improves the fan control, airflow, and efficiency. "We were one of the first to introduce fan control to reduce fan noise and increase fan MTBF, which we view as the weak link in the power supply due to its moving parts. The power supply fan ought to run as fast as it should, not as fast as it can."

Design

Seasonic chose ADDA's products to integrate into its systems because of ADDA's volume production of these fans.

The higher the production volume, the better the quality, Han says. Seasonic designs its heatsinks and all its daughter boards in line for a clear flow of air. This method extends the fan life by eliminating unnecessary rotation. As a result, the higher the capability, the fewer fans and less energy are required to increase efficiency.

According to Han, this design permits Seasonic to use the power supply as a convection-cooling fan at around 80 to 120 watts. All the Seasonic models can reach 80% or greater efficiency, "and we were the first to pass 80 PLUS certification," continues Han. "In short, silent and high efficiency are correlative; that is, high efficiency equals less heat, equals less fan rotation, equals silence."

R&D

According to Han, in 1999, Seasonic started making APFC (Active Power Factor Correction) power supplies when 95% of PSU companies were still producing non-APFC power supplies. This was a huge challenge for Seasonic because the cost of PSUs increased, but Seasonic believed that APFC PSUs could enhance the units' efficiency, save energy, and would become the trend of the future because of the "green" initiatives. "Our philosophy, even though the sales decreased as a result of the increased price, was to continue producing the APFC PSUs, and now all of our products are APFC," says Han. To clarify, Active Power Factor Correction uses a circuit to correct the power

factor, so it can generate a theoretical power factor of more than 95%. In short, it provides more efficient power frequency.

In 2004, Seasonic started developing 80 PLUS-certified power supplies and became the first manufacturer to get that certification. During this process, the R&D team of engineers faced a difficult challenge: They discovered that it was hard to reach 80% efficiency with 20% loading (there was no problem reaching 80% efficiency under 50 or 100% loading). Because the fan within



the power supply consumes a lot of watts alone, the solution became even more of a challenge. But Seasonic still insisted on conquering the beast because desktops are in sleep mode at around 20% loading, most of the time. Therefore, reaching 80% efficiency under 20% loading could only save energy. Now, Seasonic's PSUs can reach 80% efficiency under all percentages of loading, Han notes.

Competition

Seasonic's primary competitors are manufacturers and/or brands that carry the 80 PLUS-certified PSUs in both the retail and SI markets. There are almost 100 competitors just in the United States; however, Seasonic has always been the leader in this industry, notes James Chen, account manager at Seasonic.

"We were one of the first to introduce fan control to reduce fan noise and increase

fan MTBF," says Chen. "We were one of the first to implement Active PFC for PC power supplies while our competitors were still chugging away with big passive chokes. We were one of the first to implement SMD [Surface-Mounted Device] technology to further increase quality and reliability, and we were also one of the first to implement forwarder converter circuit design to enhance high quality and reliability by reducing component count."

In addition, Seasonic was the first to pass the 80 PLUS certification, which perfectly timed its "Green Innovation" philosophy for the company. "We believe we have a responsibility to the environment, and we try our best to innovate, design, and build products in line with those beliefs," says Chen.

Seasonic's target audience is system integrators, IT-related engineers, product managers, and management information systems personnel. The benefits for companies using the Seasonic 80 PLUS power supplies, in addition to their design and energy savings, are rebate dollars per ATX unit from the local utility company (in many states). Because most utility companies have realized that energy savings are a significant issue, people are encouraged to use high-efficiency, energy-saving electronic appliances such as the Seasonic 80 PLUS ATX power supply.

Future Plans

Seasonic will continue to develop higher-wattage units, but its first priority is always the quality of the PSU, then the wattage. "Green" is Seasonic's philosophy and a persistent goal for its R&D engineers. The concept of Green Innovation defines why Seasonic strives for better products.

"We want to make and innovate Seasonic's PSUs [to be] highly efficient, reliable, silent, and green with our R&D technology," says Warren Chen, general manager at Seasonic. "And even though we are the industrial leader in the power supply field, we will keep improving our R&D efforts to reach higher efficiency within our products—that is, less heat, less waste, and products for a better environment." P

THREE QUESTIONS

i/o Data Centers Provides Digital-Grade Space

Outsourced Rack, Cage & Room/Suite Data Center Facilities That Stay Up

by Daniel P. Dern

i/o DATA CENTERS (www.iodatacenters.com) designs, builds, and operates outsourced data center, colocation, and disaster recovery services for enterprises and other companies requiring uninterrupted data center service. i/o Data Centers offers facilities ranging from half-rack cabinets and private steel cages with locked doors to dedicated data center rooms and suites up to 20,000 square feet in size and providing several megawatts of power and cooling. The company's standard customer uses several racks, anywhere from 100 to 5,000 square feet of space.

"i/o Data Centers has been around for a little over a year, but the management and backers have been working together building world-class data centers for nearly a decade," notes Anthony Wanger, senior managing director for i/o Data Centers. "Before we founded i/o Data Centers in 2006, the other two partners and I, and the same financial backers, ran Sterling Network Services, which was one of the first data center out-sourcers. We have built and operated over a dozen high-availability data centers for some of the world's biggest companies and ecommerce sites, including several Fortune 100s,

large Web companies, and financial institutions. All these customers have one thing in common: They need continuous digital-grade power, air conditioning, network access, and other data center continuity."

■ What are the biggest IT-related issues facing today's small to midsized enterprise?

"Digitization and how it's increased IT's responsibilities and challenges," says Wanger. "Today, IT is integrated into virtually every level of the business, from the front end, like CRM, sales, [and] Web-based sales, through operations, accounting,

billing, receiving, collecting, and human resources (HR). The demand for IT continues to increase—more, better, faster, more capacity, store more email. . . . Demand continues to ramp, in an almost relentless way. There's more data every day, and the data is critical. But IT is asked to deliver this service without the assets needed to provide it."

■ What should Processor readers know about your company's products?

"We provide best-in-class outsourced high-availability data center service. This includes redundant conditioned power and air and carrier-grade or better network infrastructure, plus security and numerous amenities," says Wanger. "And we offer up to a 100% service level agreement; this is significant because many data center operators will not do this."

"We have economies of scale because we build en masse, and we have economies and efficiencies of scope," says Wanger. "The primary reason that companies choose our data center is the scale of our operation. And because we've built highly connected large data centers before,

we can offer expert assistance doing this cost-effectively."

■ What makes your company unique?

"Many people in the data center industry are essential real estate owners. We have a team of experienced professionals who are dedicated to assessing, adapting, and evolving with the data center needs of your business," states Wanger. "And we actually have engineering and operational folks here on-staff 24/7, like electricians, cooling systems engineers, and other specialists."

Also, i/o Data Centers takes a fully integrated approach. "In the traditional model, smart engineers put together a design and give it to contractors they've never met [and] get three bids. . . . They build the data center and hand it over to another group to operate," Wanger says. "Add in the IT department, and now you have at least four groups involved who don't know what decisions were made why. The builder tries to follow plans, but there may not always be complete details, and in data centers, little things matter, like whether you weld the pipes and use pin or tumbler locks."

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